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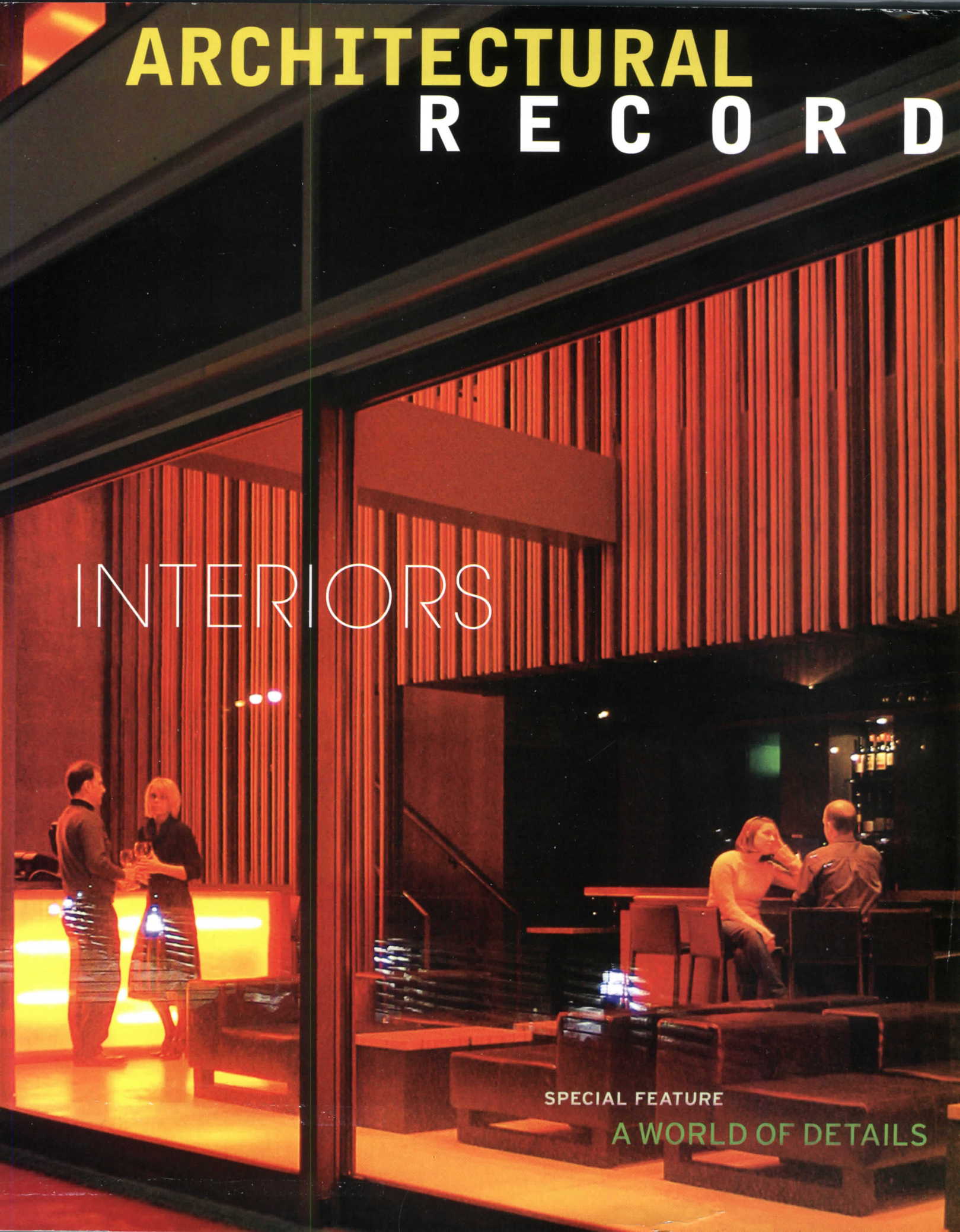

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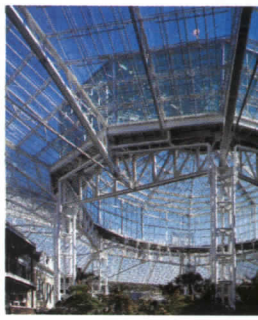

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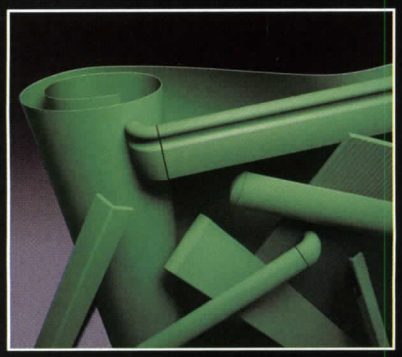

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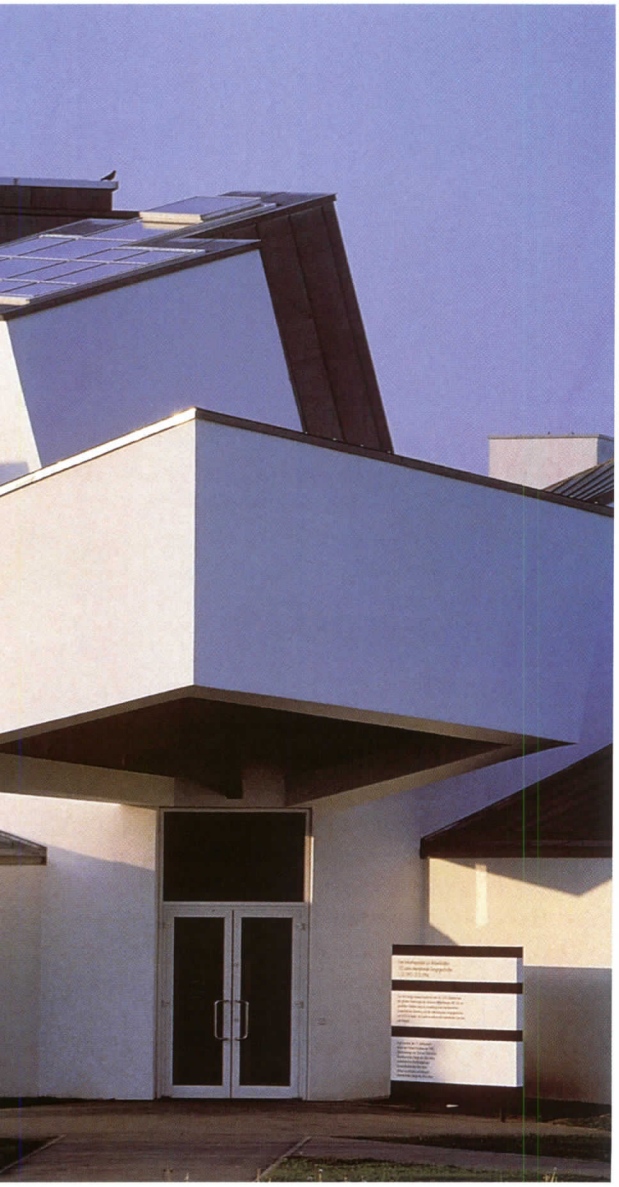

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On the Cover: *Downtown Bar, by Johnsen Schmaling. Photo by Doug Edmunds.*
Right: *Nishimura, by CL3 Architects. Photo by Eddie Siu.*

News

35 9/11: seven years later
36 Universities go green
40 Singapore booms
42 Construction of "world's worst building" resumes?

Departments

25 Editorial: The Natural Edge
27 Letters
53 Archrecord2: For the emerging architect
57 Critique: Midcentury Modernism at the museums *by Martin Filler*
61 Books: Suburbia under the microscope
65 Exhibition: John Lautner at the Hammer *by Sarah Amelar*
69 Practice Matters: Mediation 101 *by B.J. Novitski*
75 Trade Show Review: NeoCon *by Eileen Ragsdale*
79 Snapshot: Blue Frog Lounge *by Jennifer Richter*
183 Dates & Events
212 Backpage: Kristofer Kelly *by Elizabeth Zevallos*

Features

84 Themes and Variations *by Linda C. Lentz*
A study in details: a look at the work of seven multifaceted firms.

Building Types Study 884

95 Record Interiors 2008 *by Linda C. Lentz*
96 Downtown Bar, *Wisconsin* *by Josephine Minutillo*
Johnsen Schmaling Architects
A 7-foot-wide ribbon of light wraps a lounge in sultry hues.
100 Nishimura, *China* *by Alex Pasternack*
CL3 Architects
Japanese gardens and the changing seasons inspire a sculptural interior.
106 Virtual Light Loft, *New York City* *by Suzanne Stephens*
Dean/Wolf Architects
Transforming an apartment's dark central core with filtered light.
112 Bape Shibuya, *Japan* *by Naomi R. Pollock, AIA*
Wonderwall
Extreme design dazzles shoppers in Tokyo's trendy Shibuya district.
116 BNA/Royal Institute of Dutch Architects, *Amsterdam*
by Tracy Metz
BAR/architecten Van Mourik
A crystalline "city of boxes" helps an agency meet its goal for transparency.
122 Stix, *Boston* *by Clifford A. Pearson*
3SIX0 Architecture & Design
A versatile design enables a space to morph from restaurant to lounge.
126 Sheila C. Johnson Design Center, *New York City*
by Beth Broome
Lyn Rice Architects
Demonstrating a school's commitment to design with a radical makeover.

Architectural Technology

138 Some Assembly Required *by Joann Gonchar, AIA*
Five prefab houses sprout up outside New York City's MoMA.

Products

171 Glass *by Elizabeth Zevallos*
175 Product Briefs: ICFF *by David Sokol*
204 Reader Service

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This month, we feature seven **Record Interiors** exclusively profiled on our site. You can **comment** on each of the projects, **share images** of your own interiors, and participate in our **forums** at **archrecord.com.**

Reader Photo *One of nearly 2,000 images posted by our readers: The Seadrift Residence in Stinson Beach, California, designed by CCS Architecture.*

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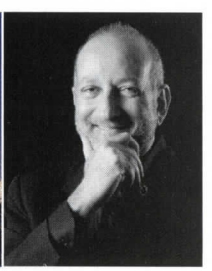
PHOTO GALLERIES | BLOGS | FORUMS | VIDEOS | COMMENTS

House of the Month
Stephen Dynia's Cornell House proves that homes in Wyoming don't have to be oversize energy suckers.

Record TV
Visit our library of some 50 videos. New this month: a tour of Santiago Calatrava's new bridge in Jerusalem.



Newsmaker Interviews
Weekly interviews with people making headlines. New this month: A conversation with Enrique Norten.

Your comments

"The furniture, finish, and materials are 100% office suite. Generally I like the rationality and sparseness of a good modernist interior, [but] this doesn't look rational so much as sterilized corporate."

— Anonymous, on August's House of the Month

Expanded Coverage

Record Interiors
View seven Web-exclusive interiors and dozens of additional photos of projects featured in this issue.

Products
We reveal an expanded list of the best new glass and glazing products and look at products from this year's NeoCon fair in Chicago.

AR2
Meet Frenchman Philippe Rondeau, who, with partner Li Yun, has made China his emerging firm's home.

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Photography (from top right, left to right): Courtesy melissa; Stephen Dynia Architects; © Santiago Calatrava; Winda Berkowitz; Kozo Takayama; courtesy Nathan Allan Glass Studios; Philippe Rondeau; © MoMA/Richard Barnes

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CIRCLE 11

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Architectural Record Continuing Education

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149-153
Large, Low Velocity Fans: Making Energy Efficiency a Breeze

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155-159
Raising the Energy-efficient Roof with Concrete Tile: Beyond Traditional Curb Appeal

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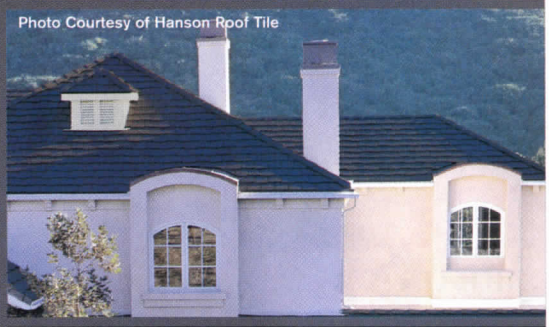
Photo Courtesy of Hanson Roof Tile

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161-165
Hot Water on Demand: Natural Gas Tankless Hot Water Heaters Fit your Energy Budget

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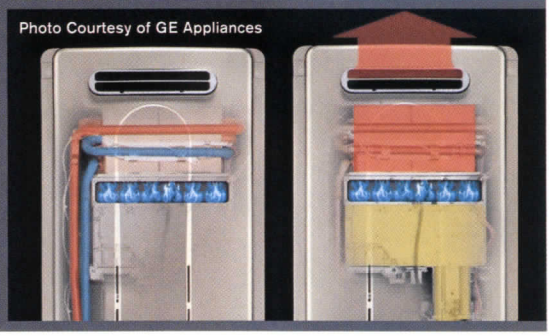
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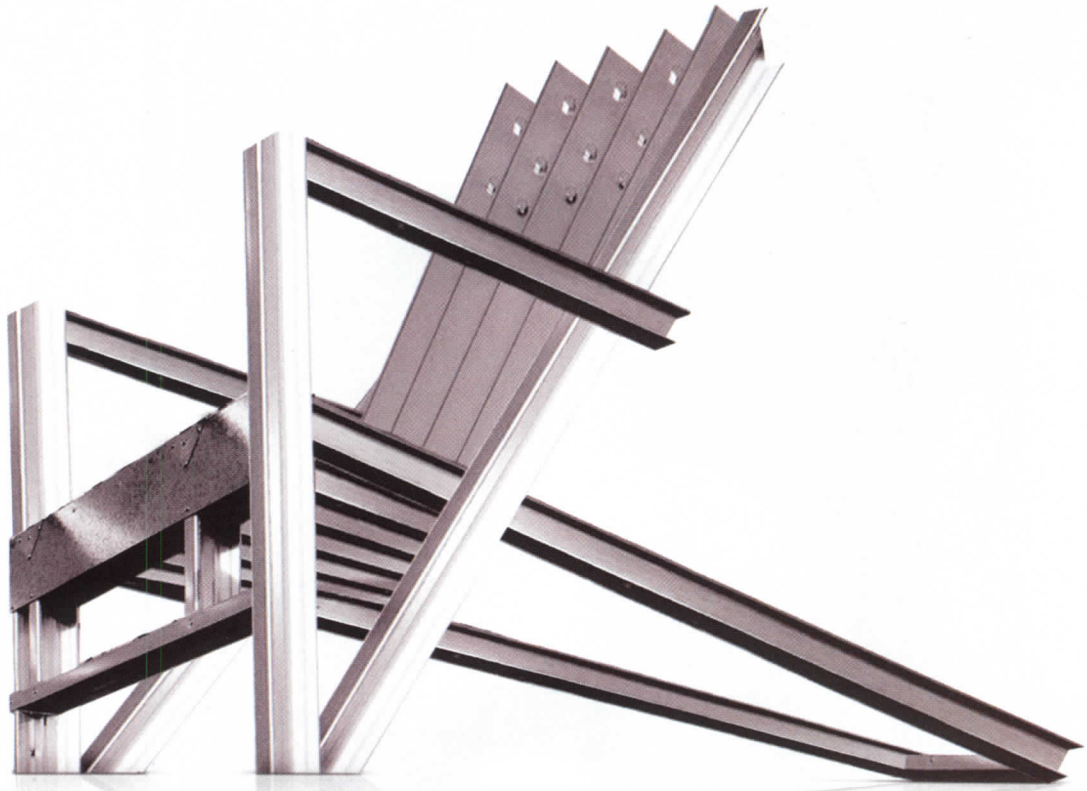

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CIRCLE 15

The Natural Edge

Editorial

By Robert Ivy, FAIA

Ah, Nature. As much as we architects love the natural world and find it a constant source of revelation, we prefer to view it from a human-made perch or platform. Call it a professional bias toward the constructed landscape. When rambling through the unfettered woodland depths, our feet inevitably find the pathways, the Appalachian trails of the world, where we stop to surmise: How could this walkway be improved? Pathetic? Comedic? Ironic? We cannot escape our fate, so inescapable is the design impulse.

In New York, the admixture of human will and nature collides with power along the Hudson, where Manhattan's sky-blown canvas stretches as broadly as any painting by J.M.W. Turner. Seated on a bench near the tip of the Battery, the eye sweeps 180-degrees, up north toward the Palisades, past the intermittent islands (Ellis, Governor's), and down to the Narrows. Cloud forms like lightly spun lanterns catch the morning light; in the evening, the sunsets blaze, then burn into New Jersey's heart, while the constant vector of the Hudson pushes down and out. The coda and changeable opening chorus of the Empire state.

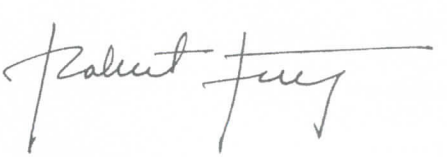
A light-catcher, most apparent from a park bench directly across from the Battery, the Goldman Sachs tower, by Cesar Pelli (2001–04), anchors the harbor, where it sets a heroic, multifaceted spike into the landscape. Such a physical setting of operatic scale deserves a building with both magnitude and gravitas, which Pelli's 42-story tower delivers, stepping from a massive base in a carefully controlled, syncopated thrust, up and up again. Who today understands the tall building, the reticulated tall building, better than he?

Downstream, we catch the historic arm and torch of liberty's personification, our Lady of the Harbor, a diminutive, verdigris figure, but a resolute one, constantly overseeing the sweep of sailboats and ferries plunging and plowing their way around the harbor. Beyond our range, around Manhattan's tip, Olafur Eliasson's waterfall plunges into the East River as if into a Hudson River cataract, while at the edge of sight, the twin arches of the Verrazano bridge link Brooklyn and Staten Island in a complete Romantic vista.

Though the view above the horizon seems untamed, even the vantage point has unnatural roots. The land that holds the Museum of Jewish Heritage (Kevin Roche John Dinkeloo and Associates, 2001), Wagner Park (Machado Silvetti, architects; Olin Partnership, landscape architect; Lynden Miller, garden design, 1996), and Battery Park City itself rests on 92 acres of landfill. The 1.2-mile-long esplanade, a serendipitous linear open space where land meets water, and an ideal platform poised between the ethereal and the constructed, was designed by the Philadelphia-based Olin Partnership as part of a larger master plan for the entire Battery Park area in 1979 by Cooper-Robertson and Ehrenkrantz Ekstut and Kuhn together with Hanna/Olin. Individual park settings and artwork by a variety of designers complement the largely residential ensemble of tall buildings that form an urban palisade, separating the island from the rest of the world.

At eight o'clock on a Sunday morning, the powerful backdrop provided by architecture and landform provides a stage for human activity, which rolls or runs or lopes along its perimeter in a lazy ballade. People breathe in the natural fullness, unfurl their fishing lines in lightly fingered arcs out into the water, inhale and settle into yogic calmness on the grass. They watch each other, or ogle, or nod, and move or find stillness, surrounded by a greensward below, with mallows blooming and grasses and shifting trees behind, thinking great thoughts or emptying their minds, Zen-like, toward nothing at all.

People relish the setting for allowing them to touch nature, when, in fact, human intervention brings the scene to life. The sights the public consumes have been framed as an idealized canvas open to change, all designed to capture the inherent power at the edge of things. Happily, architects and landscape architects do not have to choose. As stewards of the environment, our task consists of the conjunctions, "both/and." Yes, we respect untrammeled nature and fight for its place as a shrinking resource. Yes, our role consists of animating and framing nature, providing pathways to the edge and platforms for peering into its heart.



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CIRCLE 16

Letters

Problematic and homely

I always enjoy Robert Ivy's editorials, but I think he has it wrong (in fact, almost all wrong) in August ["Simply Fab," page 23]. The real issues with prefabricated housing have little to do with design (though most prefab houses are quite ugly). The core issues are economic. Because housing is so cyclical, it is almost impossible to economically justify the construction of large factories to produce prefab houses in enough bulk to really make a difference. Build a big factory and all is well when housing starts push two million units; build a big factory and you're out of business in a hurry when it starts to drop to one million units. There are other economic issues as well. The cost of transporting pre-built units is prohibitive over any long distance, and this is a very large country. So you're faced with building small, inefficient plants all over the place. That simply doesn't work. Finally, for the prefab housing industry to achieve a scale that matters, you'd need a builder of national scope, a General Motors of the housing industry, if you will. And we're a long way from that.

So, as I see it, you'll continue to have prefab homes relegated to exurban spots where volume builders of stick-built houses are not active and on the odd, infill site where a particular buyer for whatever reason decides to order what's in effect a custom pre-built house, which of course defeats the purpose of a pre-built house. In other words, I don't see things deviating from the pattern that persisted since the end of World War II. I'd love to be wrong, but I don't think I am.

–Former editor of an architectural publication

In the U.S., little or no research funds go into architecture or housing, as opposed to the huge sums that are spent in engineering studies. Robert Ivy's challenging essay reminded me of when a large housing research study was funded by HUD. HUD Secretary George Romney announced on May 9, 1969 Operation Breakthrough, a national program designed to demonstrate the potential of industrialized housing and modular housing systems to address shortages of affordable housing. Operation Breakthrough's program would seek to change a backward home building business immune to innovation. Romney was the former President of the Ford Motor Company. This redesigned technology had the vision of assembly-line housing. There would be mass production in the factory of entire rooms, or modules, which would be shipped to building sites and stacked in place by cranes to create moderately priced homes. Other goals included incorporating energy savings methods in these homes, and having each state pass a new industrial building code and change transportation regulations to allow trucks carrying these housing products on all highways. What attracted many to the program was the awarding of Section 236 subsidy grants to the developers of this Operation Breakthrough housing. Among the entrants were American Cyanamid, GE, ITT, Inland Steel, Alcoa, CNA Insurance, Philip Morris, Boise Cascade, Sterling Homes, and Warner Communications. Many entrants teamed together.

Everything ended in January 1973, when Nixon announced that Section 236 subsidies were over. Shortly thereafter, Romney resigned as HUD Secretary. All is not lost. The need for making housing less expensive, more efficient, and to lower home-operating costs is just as important today. The Construction and Building Subcommittee of the National Science and Technology Council has developed seven national construction goals for the entire construction industry (NIST, 1995). The seven goals are: 50 percent reduction in project delivery times; 50 percent reduction in operations, maintenance, and energy costs; 30 percent increase in occupant productivity and comfort; 50 percent fewer facility-related illnesses and injuries; 50 percent less waste and pollution; 50 percent greater durability and flexibility; 50 percent reduction in construction illnesses and injury.

This is attainable. I am sure the movement for reduction in carbon will persuade Congress to provide more and better subsidies. One problem architects can help solve is to change the look of modular housing. Most of the examples I have seen in *Dwell* are not attractive or meaningful. I once asked a world-class architect, "What is good architecture?" He replied, "When you feel better about yourself when you are in this building, that is good architecture." That is what industrial and modular housing systems need.

–Don Tishman
Pleasanton, Calif.

A good egg

We have all read criticisms which amount to damning with faint praise but I must confess I am really surprised by the remarks made by Fred A. Bernstein pertaining to the National Center for the Performing Arts in Beijing, "the Egg" designed by Paul Andreu [July 2008, page 120]. Rather than finding this building "ripe for second-guessing" and not packing much of a punch, I would suggest it is a very sensitive and elegant solution to the problem of a performing arts venue amid an assembly of sports arenas. The use of the classic shape of a dome (meticulously detailed) as shelter for the venue, and the building's treatment as an island separated by calming water, are singularly impressive. Despite Mr. Bernstein's credentials, I think in this case he has missed a beat.

–Robert J. Pesce, AIA
Benbrook, Tex.

Harvard under pressure

From the outside, Harvard has always looked "awesome." However, per Robert Campbell, FAIA's, Critique about the deterioration of the Fogg Museum's 1991 addition, Werner Otto Hall [August 2008, page 53], the institution is subject to foibles of irrational thinking. Whoever allowed a building to rot to death was very uninformed. The 50 percent humidity called for by the curators is too, too high; 25 to 35 percent humidity is enough. Furthermore, curators and conservators asked that the interior of the addition be pressurized. Positive pressure is mostly only applied to electronic manufacturing and bio processes. Whoever is the chief of buildings at Harvard is irresponsible. A university does not decommission a building after 15 years. Harvard should repair, use 25 percent humidity and not pressurize!

–Hugo Beit
New York City

Corrections:

A photograph of Greenbridge, the AIA/HUD Award winner for Community-Informed Design [July 2008, page 200], was mislabeled. The architects were GGLO, and the development is in Seattle/White Center, Washington. A news story about tall buildings in Dubai [August 2008, page 32] inaccurately stated that Michael Brendle is a design principal at ELS. He is a design principal at RNL, which has worked on several master plans and towers in Dubai.

Send letters to rivy@mcgraw-hill.com.

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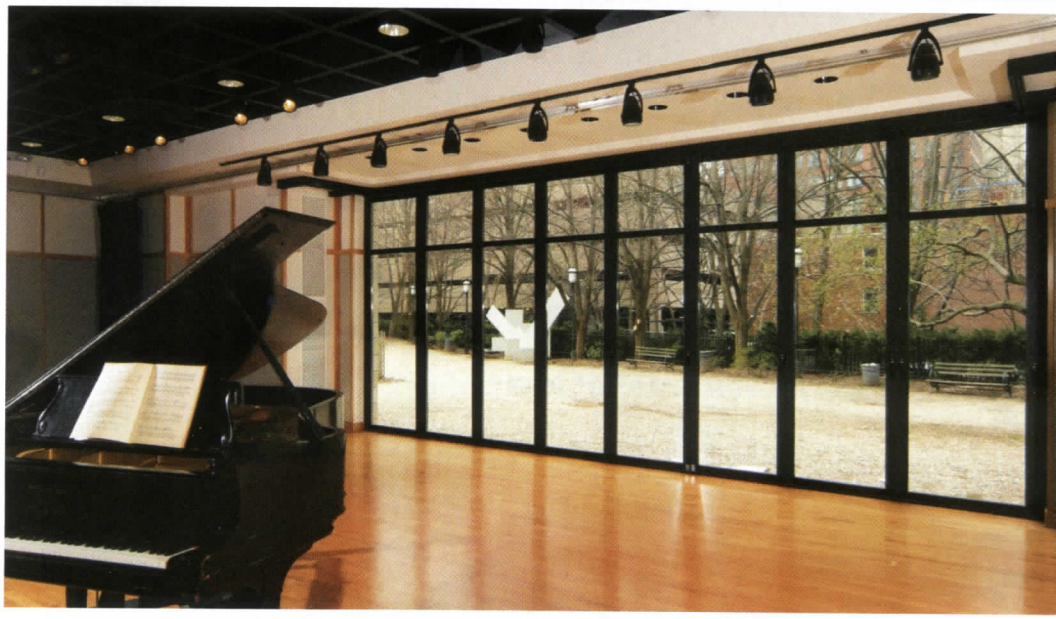

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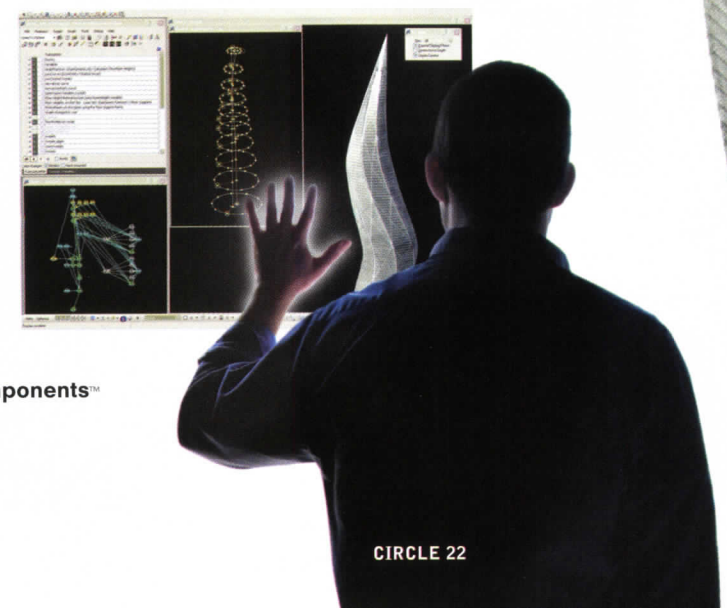

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CIRCLE 22

Record News

Inside the News

p.36 **Universities go green**

p.40 **Is Singapore the next boomtown?**

p.42 **"Hotel of Doom" subject of tall tale**

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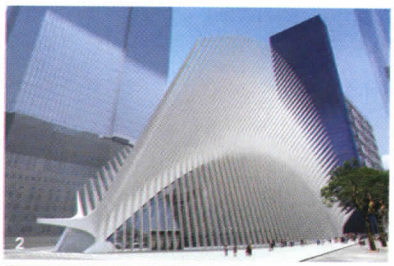
At Ground Zero, little progress after seven years



Projects proposed for the 16-acre World Trade Center site (1) include a transit hub designed by Santiago Calatrava (2), a memorial and museum by several architects (3), and the Freedom Tower by Skidmore, Owings & Merrill (4).

PHOTOGRAPHY: © JOE WOOLHEAD; COURTESY PORT AUTHORITY OF NEW YORK AND NEW JERSEY

After New York City's Twin Towers fell in September 2001, rebuilding quickly – and majestically – seemed imperative. But seven years later, there is nothing majestic about the 16-acre World Trade Center site, a construction zone informally called The Pit.

In early July, the property owner, the Port Authority of New York and New Jersey, announced that all of the projects planned for Ground Zero were over budget and behind schedule. The authority's executive director, Christopher Ward, delivered the bleak assessment during a meeting hosted by New York's Downtown Alliance, a nonprofit that promotes development in Lower Manhattan. Ward noted straight off that most of the projects have been "driven by emotional and political needs," and the costs and timetables initially presented to the public are unrealistic. "We are not going to make any of them," he said.

While Ward was vague on details, a 34-page report the authority presented to New York Governor David Paterson pointed to 15 fundamental issues that are holding up progress. The report mentions rising construction costs, incessant demands of stakeholders, the lack of unified leadership, and the unprecedented scope of the redevelopment plan. Noting that there has been "no efficient decision-making process or steering committee," Ward proposed that stakeholders come together and, by the end of September, set "clear and achievable timelines."

Some found Ward's announcement refreshingly honest. "It was clear he got it right away and understood what it was going to take to make this happen," says T.J. Gottesdiener, FAIA, managing partner at Skidmore, Owings & Merrill (SOM). Others are not so hopeful. "People are fed up," says Peter Slatin, editor of *The Slatin Report*, a popular commercial real estate Web site. The parties involved have cast aside the public interest, he says, and turned the rebuilding effort "into a circus for political and commercial interests."

There are 26 projects totaling $15 billion planned for the site, according to *The New York Times*. The centerpiece of the scheme is the SOM-designed Freedom Tower, or 1 World Trade Center. Originally scheduled to be finished this year, construction of the 1,776-foot-tall skyscraper has inched along since foundation work began in 2006. Today, steel columns rise a mere 20 feet above street level.

Still, the Freedom Tower is faring better than Towers 2, 3, 4, and 5 – designed by Norman Foster, Richard Rogers, Fumihiko Maki, and Kohn Pederson Fox, respectively. Tower 2 is in the excavation stage, while foundation work on Towers 3 and 4 got under way in February. The Tower 5 project is at a standstill until the former Deutsche Bank building, at 130 Liberty Street, is demolished. Further dampening spirits is a weakening commercial real estate market in Manhattan. The only completed tower at Ground Zero – the 52-story, SOM-designed 7 World Trade Center, which opened in 2006 – is only 75 percent filled.

Given the dire situation, project downsizing is likely. Santiago Calatrava's transit hub, projected to cost up to $3.5 billion, already was scaled back: In July, the hydraulic system that would allow its roof to open and close was eliminated from the proposed design. A performing arts complex by Frank Gehry might not get built at all.

One landmark now under way is the National September 11 Memorial and Museum. The architect Michael Arad, with landscape architect Peter Walker, proposed the competition-winning scheme for the memorial: two pools in an 8-acre, tree-filled plaza. David Brody Bond Aedas designed the museum, located mostly below ground, with an entry pavilion by Snøhetta. Foundation work on both projects is nearing completion.

Joe Daniels, president of the memorial and museum, says it is essential that the memorial be open by the 10th anniversary of the terrorist attacks. The architect, while happy the project is moving forward, is not optimistic it will be finished by September 2011. "It's a significant milestone," Arad says, "and I'm disappointed that we're not going to be able to meet it." *Sam Lubell*

View additional images online.

Princeton's campus plan comes into full bloom

Princeton has several major projects planned for its campus, including a chemistry building (left) by architect Michael Hopkins and a new arts plaza (above).

Environmental sustainability has long played a role in Princeton University's plan for its 380-acre campus in central New Jersey. While consulting on the landscape design from 1912 to 1943, the landscape architect Beatrix Farrand employed conservation measures, such as creating underground cisterns to collect rainwater for irrigation. So it follows that the school's latest campus plan – its most ambitious to date – has a green focus.

The 10-year plan, envisioned by Beyer Blinder Belle (BBB) and a university steering committee, calls for adding 2 million square feet of built space. It dovetails with the school's recently announced sustainability initiative, which aims to reduce, by 2020, greenhouse gas emissions to the levels they were in 1990. This will prevent 75,000 metric tons of carbon dioxide from entering the atmosphere each year, according to a university spokeswoman.

To help accomplish this goal, the BBB plan treats the campus as a series of neighborhoods and encourages increasing density, rather than developing a 400-acre, university-owned forest that adjoins the campus. "Rather than just plopping down buildings, we wanted to integrate the campus into the natural systems of the environment," explains partner Neil Kittredge.

All new buildings will be designed to achieve at least a LEED Silver equivalency. These projects include Butler College, a 112,000-square-foot dormitory by Harry Cobb that will feature a partial green roof; a 240,000-square-foot neuroscience and psychology complex by Rafael Moneo, to be built with a cut-and-fill process to eliminate waste during construction; and a 40,000-square-foot academic building by Frederick Fisher that also will include a green roof. In addition, Steven Holl has been tapped to design three buildings totaling about 130,000 square feet for a new arts complex that might incorporate a geothermal heating system. Already under construction is a 260,000-square-foot chemistry building by British architect Michael Hopkins, which is designed to consume 33 percent less energy than a typical research facility.

Existing buildings will be retrofitted to meet the new green standards. The university intends to update heating and cooling systems, replace windows to improve insulation, add solar panels, and use LED lighting for outdoor spaces. The plan also encourages less driving via improved pathways and more on-campus housing. Also planned is a new mixed-use transit hub for Princeton's train system that will include retail space and bike lock facilities.

Beyond buildings, the New York-based landscape architecture firm Michael Van Valkenburgh and Associates has designed a landscaping program with sustainable features, such as rain gardens, planted depressions that absorb rainwater runoff.

The school's efforts tie in with a countrywide movement to green college campuses. Given its history, it's only natural that Princeton set a good example, explains Mark Burstein, vice president. "We thought the leadership role of the institution," he says, "was to make our campus a laboratory for cutting emissions." *Dianna Dilworth*

View additional images online.

University leaders aim for climate neutrality

In October 2006, a handful of education leaders launched the American College and University Presidents Climate Commitment (ACUPCC), an initiative that aims to make all campuses climate neutral. Of the 4,300 U.S. colleges and universities, more than 550 have signed on, from community colleges to Ivy League schools.

The initiative encourages *general measures* to eliminate greenhouse gas emissions, such as pursuing LEED certification for new construction and implementing purchasing policies that mandate energy-efficient appliances. But each institution is responsible for establishing its own strategies and deadlines, and there are no enforcement mechanisms. This ambiguity is one reason why some schools refuse to sign on.

Noting that climate neutrality can't be obtained with the current technology, Yale University has abstained. But that hardly means it's shunning the sustainability movement. School president Richard Levin says he intends to make Yale the "greenest university" and has started to walk the talk: The school is installing solar panels and wind turbines on campus and is pursuing a LEED Platinum rating for its new Kroon Hall.

At Johns Hopkins, also a nonsignatory, green efforts include converting shuttle buses to run on biodiesel, says Davis Brookhart, the school's sustainability director. One problem with the ACUPCC, he explains, is that it's difficult to define a university's carbon footprint. "If a student goes on spring break to Dayton Beach," he asks, "are we responsible for that, too?"

Despite the skeptics, ACUPCC is on target to reach its goal of 1,000 signatories by December 2009, says co-organizer Lee Bodner, executive director of ecoAmerica, one of three organizations helping to promote the initiative. "It's really generating the momentum we're looking for," he says. *Elizabeth Lunday*

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Students master the art of building

When Hurricane Hugo ravaged Charleston, South Carolina, in 1989, more than 4,000 historical buildings were severely damaged. Due to a dearth of traditionally trained workers in the U.S., European craftsmen were brought in to restore the structures, many of which dated back to the early 1800s.

Importing these types of experts may no longer be necessary. After getting licensed in 2004, the American College of Building Arts (ACBA), in Charleston, will graduate its first class next May. John Paul Huguley, a preservationist and structural engineer, founded the college, formerly the School of

the Building Arts in Charleston, in 1998. Inspired by European restoration specialists, who are formally trained and supported by guilds, he modeled it after schools in France operated by Les Compagnons du Devoir, a 600-year-old organization for craftspeople.

The ACBA is not merely a trade school. It is the only four-year university in the U.S. that offers associate's and bachelor's degrees in the building arts. Students major in architecture or historic preservation and select a concentration in architectural metal, plaster working, masonry, carpentry, architectural stone, or timber framing. The students spend three days a week in the classroom, and two in the workshop. There are no electives, and each summer students must complete an eight-week internship aligned with their concentration.

At the American College of Building Arts, students concentrate on one of six areas, such as stonework (left) and masonry (above).

"Every class is geared to fulfill a liberal arts curriculum, but in a very specific, integrated way," explains Deborah Bowman, director of enrollment and student services. "Instead of biology, we have material science. Instead of the history of Charleston, we have the history of architecture."

The college has an eclectic mix of scholars ranging in age from 17 to 30. Some are teenagers fresh out of high school, while others already have bachelor degrees. When classes got under way on August 13 for the fall semester, the school welcomed a total of 60 students, one third of them female. Enrollment is increasing: There are 25 freshmen this year, a 60 percent increase from 2005. The annual tuition is $20,000.

When evaluating candidates, the selection committee considers standard criteria like high school transcripts and SAT scores. Applicants must also submit a portfolio showing their work, but special emphasis is placed on the interview. The program is rigorous, much like architecture school, and Bowman says they want to ensure students are passionate and mature enough to handle the demanding course load.

The school has two campuses: A former naval base houses the workshops, and the historic Old City Jail in downtown Charleston contains classrooms and administrative offices. In the future, the ACBA plans to expand to the McLeod Plantation, a 17th-century, 40-acre estate. This year, the senior class will assist with restoration work at the site.

Students say the program offers them a unique opportunity to get a bachelor's degree while studying a trade. Isaiah Shaw, 24, became interested in timber framing while living in upstate New York, where old barns abound. He knew he wanted to pursue this line of work full-time, but he didn't know how to go about it until he found the ACBA on the Internet. "It was my only option," he says. "Smaller schools offered a week or three-month course, but nothing combined a liberal arts degree with the trade." While Shaw is only a junior this year, his summer internships in New Hampshire and Rhode Island have already led to job offers.

In May, the college won an Arthur Ross Award from the Institute of Classical Architecture & Classical America. Paul Gunther, the organization's president, says the ACBA fills an important niche. "We are definitely seeing more of a need for these kinds of artisans," he says, "not only in Classical design but all kinds of construction." *Alanna Malone*

New program fuses urban ecology and design

With researchers estimating that a majority of the world's population will live in cities by 2025, an urgent need to better understand the urban landscape has arisen. In response, The New School, a Manhattan-based university, has created an environmental studies program centered on urban ecology and design. The program will launch in 2009, pending state approval.

Two degree tracks will be offered: a bachelor of science with a focus on urban ecosystems and sustainable design and a bachelor of arts with a focus on urban ecosystems or policy. Students will take courses – with titles such as "Planning the Sustainable City" and "Ecotopian Design" – in the university's liberal arts school (Eugene Lang College) and design school (Parsons). All students are required to complete an internship to help prepare them for a career in government, advocacy, education, or construction.

The program will be administered through the university's Tishman Environment and Design Center, created in 2006.

Students at The New School.

"The urban ecosystem and sustainability may be the most important areas of environmental study in this century," says Joseph Westphal, the center's director. "We need to prepare the next generation of leaders who will help shape a sustainable world for future generations." *Alanna Malone*

PHOTOGRAPHY: COURTESY ACBA (TOP AND LEFT); THE NEW SCHOOL (RIGHT)

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Despite its diminutive stature, Singapore booms

Singapore might be the smallest country in Southeast Asia, but that isn't stopping the 272-square-mile city-state from trying to become a big player in the global financial marketplace.

With is central business district bursting at the seams, the country, composed of a cluster of islands, is now directing its attention to the southern edge of its largest island, where 890 acres sit largely undeveloped. This prime waterfront real estate is reclaimed land, created decades ago to provide ample room for future growth, according to Singapore's Urban Redevelopment Authority (URA).

The future has arrived.

A bridge (left) designed by Cox Group and Arup resembles a strand of DNA, while a tower by NBBJ (above) is meant to evoke a sailing vessel.

Construction is now under way on Marina Bay, a mixed-use development that aims to be a world-class, 24-7, work-play environment. The ambitious scheme calls for office towers, hotels, retail space, and entertainment venues – all of which will wrap around a marina. Landscaping will include tropical gardens totaling nearly 250 acres, a project master planned by the U.K.-based firms Grant Associates and Gustafson Porter. The country also is investing in large-scale infrastructure projects, including three rapid-transit railway stations.

Marina Bay is luring companies – and architects – from around the globe. So far, it "has attracted $11.8 billion of private investment," says Pedersen Fox principal Paul Katz. In that spirit, KPF has designed five understated office towers and two residential towers for Marina Bay. Two of the high-rises were finished in 2006, and the others should be completed by 2012.

Other projects in the area include a 32,000-square-foot Art Park and a striking 919-foot-long stainless-steel pedestrian bridge. Designed by Cox Group and Arup, the bridge's design evokes the double-helix structure of DNA, explains Philip Cox, principal of Cox Group. To be completed in 2009, the bridge's five viewing platforms will offer views of Marina Barrage, a recently constructed dam that will turn the bay into a freshwater reservoir by blocking its connection to the Singapore Strait and the sea beyond.

THE 272-SQUARE-MILE CITY-STATE HOPES TO BECOME A FINANCIAL POWERHOUSE.

Chan Pong Choy, the URA's director of land administration. Las Vegas Sands is building a $3.6 billion casino-resort, designed by Moshe Safdie and Associates, and the British bank Standard Chartered has agreed to rent an office tower in Marina Bay's financial district.

Several buildings are already up and running. The 30,000-seat Marina Bay Floating Stadium, designed and built by the government, opened last year, as did Singapore Flyer, a 541-foot-high observation wheel by Kisho Kurokawa Architects, Arup, and the local firm DP Architects.

While Marina Bay will have its flashy architecture, urban design in Singapore is about having an "interesting but ordered skyline, with the emphasis being more on creating iconic public spaces rather than iconic buildings," says Kohn

The latest project to near completion is The Sail @ Marina Bay, a pair of glass and steel towers by Seattle-based NBBJ. The $200 million project, scheduled to be finished this month, contains 1.2 million square feet of luxury residential space and amenities. Peter Pran, the firm's design principal, says that Tower One, which tapers upward, "looks like a sailboat that's come in and anchored in the harbor." *Robert Such*

View additional images online.

The Marina Bay development, to be built on 890 acres of reclaimed land, features office and residential towers, hotels, shops, and entertainment venues.

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CIRCLE 34

For and about the emerging architect

archrecord2

Go East, young architect. You've read a lot about China and the massive scale of architecture and construction going on there in the pages of this magazine. The market is huge, and there's room for ambitious young Westerners. Meet Philippe Rondeau, a Frenchman who has joined up with a Chinese partner, Li Yun, to make his mark on the Eastern skyline. Also, a Chinese dean of USC's architecture school brings his students East.
Would your firm want to work in Asia? Respond at construction.com/community/forums.aspx.

Design

PRA: Young power players in China

When Philippe Rondeau was a child in France, his father predicted his future. "While my brothers were always making models of planes and boats, I was making drawings and models of buildings out of pieces of wood and matches," Rondeau says. "I was seven when my father told me I should become an architect, and I decided that day that I would." Thirty years later, Rondeau and his personal and professional partner, 29-year-old Li Yun, run the 20-person Philippe Rondeau Architecture (PRA) firm based in Kowloon, Hong Kong, and Shenzhen, China. For Yun, it was not so planned. "She became an architect by accident," says Rondeau. "In China 10 years ago the marks a student got at school gave them their place at the university. She obtained the marks that gave her the right to be registered at the University of Architecture, which was seen as a prestigious education, much like that of a doctor or engineer." The two met while working at a French/Chinese firm based in China. Rondeau admits that his aesthetic was more "Western" than what was usual in China at the time, and he says Li's was, too, which was rare for a Chinese architect and was why they connected so well. When Rondeau was fired from the firm – "There wasn't enough work," he says, "or maybe my architecture style was too creative and didn't bring in enough money for them" – it was Li he invited to join him in starting a solo practice. She did. "Right before I left the firm, I led a winning competition for a huge shopping mall and office tower," he says. "It was very new, modern, Western-like, and the developer wanted me to develop it." Because Rondeau is not Chinese, he couldn't easily start a solo practice in China, so he went to Hong Kong to create his firm. "A week later, we had about 15 architects working for us." Now the firm also has a branch office in Shenzhen, China – a 40-minute train ride from Hong Kong.

It takes guts to run a practice in such a volatile market, but Rondeau says that's just the way things work in China. Projects are huge, and while development is "long and gummy," construction must be completed very quickly. Architects can provide the entire scope of services, from design to

Jin He Star Skyscraper, Suzhou, China, unbuilt
Construction is on hold for this 558-foot-tall prism-glass-clad office tower. Folds on three facades provide visual weight to anchor the form within a modern pond.

Human Resource Center, Shenzhen, China, unbuilt
The dynamic triangle facade of these two, 14-floor towers offers a unique addition to the cityscape of Shenzhen. Three open atriums vertically cross the three-floor podium between the volumes.

CR Land Museum, Chengdu, China, 2004
The museum heralds the coastline of the East Lake like a lantern. The building is a continuous space that leads visitors from skylight-lit exhibition rooms to a roof plaza. The brick facade honors the old city.

IMAGES: COURTESY PHILIPPE RONDEAU ARCHITECTURE

Li Shui Qiao, Beijing, China, unbuilt
Design began in 2007 for this plan, which will have residences and retail, with gardens to encourage public interaction.

construction documents, from to interior design to landscape. Materials must be simple, cheap, and easy to use because of the speed of construction and the low skill of workers. Developers have competitions and do feasibility studies before even buying land or securing finances. "There are no 'small' projects in China," Rondeau says, "and all involve lots of financial partners who can quit the group at any time. Projects stop, restart, or new architects come on the job. With our experience and marketing knowledge, we don't involve the team on every developer's invitation to take part on the bidding. We wait and see." After five years and several redesigns, the International Shopping Mall is finally beginning construction.

With Li leading the marketing department and a team of architects who focus on design, and Rondeau heading up the technical side, the firm is growing fast, despite the fact that Rondeau doesn't speak Chinese. PRA currently has two projects on the boards in Vietnam and several in China, including a 525-foot-tall hotel tower inspired by the work of Japanese fashion designer Yohji Yamamoto. Rondeau's dream project? "I'd like to build a museum about traditional Chinese culture, which I love," he says. "But the building would be contemporary, not traditional." *Ingrid Spencer*

For additional photos and projects by Philippe Rondeau Architecture, *visit* **architecturalrecord.com/archrecord2/**.

Work

USC's American Academy in China takes it East

Last year, well-known Chinese architect Qingyun Ma, founder of Shanghai firm MADA s.p.a.m., moved to Los Angeles to become dean of the USC School of Architecture. Now he's bringing USC back to China.

This spring, Ma and USC announced the launch of the American Academy in China (AAC), a research institute based in Shanghai. The program will host four-week and semester-long study-abroad programs for undergraduate and graduate planning, urban design, and architecture students from USC and other schools in the U.S. and Asia. It will eventually provide an academic base for visiting scholars.

"This idea has been terribly delayed," says Ma. "In the past 20 years, almost all universities have had programs that focused on Asia or China. But the learning curve has been from 0 to 1 – never beyond that." Some USC architecture classes, for example, focus on new Asian architecture, but generally from classrooms in Los Angeles.

During the program's initial four-week sessions, which ended on July 16, about 30 undergraduates from USC, Columbia University, Seoul National University in Korea, Qinghua University in Beijing, and Tongji University in Shanghai traveled from a base in Shanghai to satellite stations in Beijing, Lijiang, and Xi'an, setting out on research projects specific to these wildly different places. Initial topics, says Ma, included explorations of urban density and landscapes in Beijing; graphic media and architecture in Shanghai; the positive and negative effects of heritage in Lijiang; and the relationship between agriculture and urbanism in Xi'an. Such four-week sessions will take place about three times a year.

"The paradigms of the West are not working for China. We'll try to develop some creative new models," says Ma. This ambitious goal, he adds, could include alternatives to our pervasive automobile culture, our divisions between agricultural and urban landscapes, and even our perspectives on individuality and democracy. "In a future of limited resources, things will be much different," he says.

The program will also feature lectures and forums given by professors from the program's participating schools in the U.S. and Asia, and an impressive list of architects and urbanists, such as the Beijing Olympic's planning director, Yan Huang; renowned Chinese artist, architect, and curator Ai Weiwei; Chinese architect Xu Tian Tian; and architects from the China Architecture Design Institute, who codesigned the Beijing Olympic Stadium with Herzog & de Meuron. Others invited for talks include Thom Mayne and Rem Koolhaas.

AAC students visit Arup's Beijing headquarters and get an insider's look at the Bird's Nest Olympic Stadium (below left). Moderated by Ma, the AAC forum, titled "Transformative Architecture," included (left to right in photo, below right) USC professor Paul Tang, RECORD *deputy editor Clifford Pearson, and consultant Annie G. Wang.*

The AAC's spring semester abroad, for graduate students, is still being formulated. But Ma says that it will be based in Beijing or Shanghai, and it will include an architecture studio as well as courses to put the studio in the context of Chinese architectural developments and general architectural history and theory. Trips will likely include visits to some of the four-week program's destinations and other cities, such as Chengdu, recently devastated by major earthquakes, and Dalian, near Korea, a major Asian cultural crossroads. Other schools will likely be added to the AAC in the future. Once a permanent base location is secured, the program will serve as a resource center for visiting scholars to work on substantial research projects, similar to the American Academy in Rome (the AAC derives its name from the Rome program).

Such a center for study, says Ma, is particularly vital because, while focused on political and economic engagement, the U.S. government and its institutions have devoted little time to the study of contemporary Asian culture. "The U.S. consulate is not doing this. The U.S. State Department is not doing this. So it's left to universities. The world will suffer if we don't find common interests and common goals," said Ma. *Sam Lubell*

For more photos of USC's AAC, visit **architecturalrecord.com/archrecord2/**.

PHOTOGRAPHY: COURTESY USC

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CIRCLE 36

When all systems seemed go for Spaceship Earth

Critique

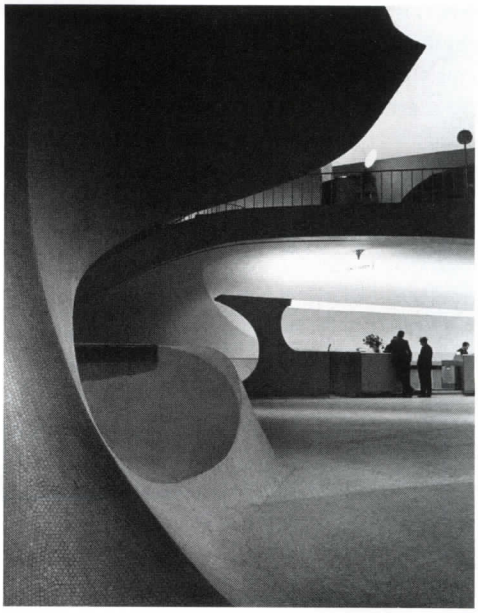
By Martin Filler

The conjunction this season of four architecture exhibitions on Midcentury Modernism at its most promising and exuberant seems less a coincidence of timing than proof of a new attitude, telling us much about the present even while illuminating the past. This transcontinental grand slam began in New York in June with *Buckminster Fuller: Starting with the Universe*, at the Whitney Museum of American Art (through September 21); continued in July with *Between Heaven and Earth: The Architecture of John Lautner*, at Los Angeles's Hammer Museum (through October 12), and *Home Delivery: Fabricating the Modern Dwelling*, at the Museum of Modern Art in New York (through October 20); and wraps up in the fall with *Eero Saarinen: Shaping the Future*, at Minneapolis's Institute of Art and the Walker Art Center (September 13–January 4, 2009).

Museums often follow trends in academe, where graduate students constantly seek fresh research topics unmined by earlier scholars. At some magic moment the recent past morphs into history, a transition that never ceases to shock those who lived through events under study. Veterans of ages past often find it hard to admit that divergent memories held by others – the *Rashomon* effect – might be equally valid.

A presumed benefit of younger, unbiased scholars rediscovering rather than revisiting history is their ability to assess facts without preconceptions. However, as is likewise true of all revivalist design – and Classicism in particular – striving for absolute period fidelity will not efface the telltale imprint of the present on such enterprises.

Interestingly, all four current shows focus on aspects of late Modernism far juicier than the late International Style in its tapped-out corporate phase, the easy target chosen by Postmodern revisionists three decades ago. Whether or not you like the eye-filling, high-flying postwar designs now being presented in museums from coast to coast, these dynamic schemes are far from the cliché glass-and-steel-box *piñata* whacked by Tom Wolfe and his fellow troglodytes.



Eero Saarinen produced romantic Modern icons, such as the TWA Terminal at JFK (above), and businesslike winners, such as the John Deere complex (left), a stylistic range that troubled some critics.

Back when Ike was president and Frank Gehry was still Frankie Goldberg, Saarinen, Fuller, and Lautner shared not a style but an outlook, and it was anything but cautious or conformist. The unbridled architectural optimism of that moment, when a triumphant America's prospects seemed limitless, is irresistibly appealing in contrast to today's justifiable anxieties about a future filled with menace of every kind, and helps explain a baffling phenomenon like Santiago Calatrava, whose retrograde imagery channels the confident glamour of the early Space Age.

Monographic exhibitions on long-dead artists confirm established historical pedigrees, while assessments of more recent figures seek to solidify their status. A posthumous reputation can slip precipitously even after a stellar career, for reasons as various as poor estate planning, critical backlash, or cultural amnesia. Although few American architects have been more celebrated in their lifetimes than Eero Saarinen, whose work was lauded by the popular press as well as professional journals, his subsequent standing has become ambiguous.

The death of Saarinen in 1961 at the scandalously young age of 51 was universally mourned as a catastrophic loss to architecture. The only consolation was his having built sufficient works of distinction (so his admirers were certain) to clinch a high and lasting place in history. Yet Saarinen's stylistically irresolute output – businesslike in one project, romantic in the next, without rhyme or reason – didn't earn the respect of influential historian-critics such as Vincent Scully, Reyner Banham, and Manfredo Tafuri.

Within a decade of Saarinen's death, some considered him a passé '50s fad, an architectural hula hoop. This was a cruel reversal, though some of his best work – such as the biomorphic TWA Terminal of 1959–62 at New York's JFK Airport – quickly entered the canon and stayed there. But uncertainty lingered about his precise rank in the

Martin Filler writes for The New York Review of Books *and is the author of* Makers of Modern Architecture *(New York Review Books).*

PHOTOGRAPHY: © BALTHAZAR KORAB (TOP); HAROLD CORSINI (BOTTOM)

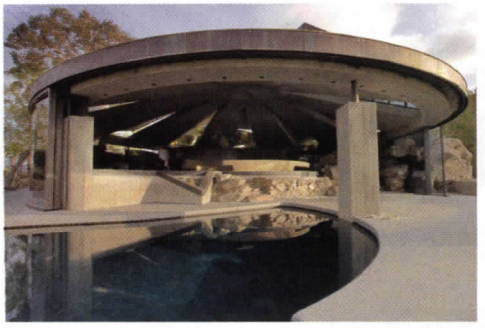
Modernist pecking order.

A big part of Saarinen's posterity problem has been the lack of advocacy literature. He wasn't a writer, didn't move in intellectual circles, and scholarly research was blocked by an ill-judged embargo on his archive that was lifted only after the millennium. His second wife, the well-connected art journalist Aline Saarinen, energetically promoted (and sometimes even reviewed) his work, but she survived him by little more than a decade, unlike the eternal Bauhaus widows Ise Gropius and Sibyl Moholy-Nagy, who stalked historians, courted curators, haunted conferences, and churned out letters-to-editors by the ream.

Public relations can only do so much, however, and in the end there is only the work. Recaps of even the most charmed careers can be unwittingly merciless, and *Eero Saarinen: Shaping the Future* reveals him to have been an astoundingly facile but sometimes depthless designer, uneven not in sustained phases but from job to job. Yet a number of his many plummy commissions turned out well enough to justify renewed interest, and his underpraised but magisterial John Deere and Company Administrative Center of 1957–63 in Moline, Illinois, now looks better than ever.

Bucky Fuller's grandiose projects, such as a dome over Manhattan (above) inspired Team X in Britain and the Metabolists in Japan.

Even when Saarinen's designs were gratuitously exhibitionistic, they never descended into mere styling, which cannot be said of the work of his year-younger contemporary John Lautner, who outlived him by more than three decades. Lautner has been posited as America's answer to Oscar Niemeyer, the Brazilian master whose critical status has had its ups and downs during his hundred-year life span. Both these architects are superficially alike in their flair for creating sculpturally arresting structures that relate to dramatic natural settings without exactly accommodating them. Beyond that, it's apples and guavas.



The Elrod Residence, built in 1968 in Palm Springs, California (left), is just one of many sci-fi Modern houses designed by John Lautner for wealthy clients often in exotic or remote locations.

A Niemeyer retrospective I saw in Paris five years ago made me realize what a profound social impulse underpins even his most seemingly willful forms, even in monumental and problematic public commissions such as his start-from-scratch capital city Brasilia. Nothing of the sort emanates from Lautner's predominantly residential corpus, and not simply because private houses by definition do not affect society in the same way urban planning does.

Saarinen's inconsistency has bothered some critics, but an architect's doing too much of the same wrong thing – in Lautner's case, showpiece vacation houses in remote redoubts for the very rich – can have a deadening effect. Perhaps one or two of his flying-saucer-on-a-hilltop extravaganzas might be tolerable; seen in the quantity required by the retrospective format, their cumulative effect is oppressive and off-putting.

A modern house need not be Charles Moore cozy to promote what he called "the indwelling spirit," and people are entitled to live however they choose. But for me, Lautner's overbearing aesthetic embodies some of the least attractive American traits – overindulged individualism, size fetishism, and sham environmentalism. If you want a true midcentury maverick, stick with Bruce Goff, a whiz with the turkey feathers, anthracite coal, and indoor-outdoor carpeting he used to clad his incontestably original prairie houses – antitheses of Lautner's repetitive, contoured-concrete, panoramic-view Playboy pads.

The rediscovery of Bucky Fuller seems preordained amid growing nostalgia for the heady days when he coined the term "Spaceship Earth," among his many resonant catchphrases. A quintessential late bloomer who hit his stride only as he hit 70, this high-tech Maharishi was paradoxically revered by the '60s don't-trust-anyone-over-30 brigade. Now, in a world bulging with blobitecture, Fuller's best-known invention – the geodesic dome – seems pretty tame stuff, and its sievelike porosity has made it an engineering dinosaur. But in his heyday, those lightweight all-purpose shelters seemed as entrancing as a kaleidoscope to a tripping hippie.

Fuller – a logomaniac who made the garrulous Louis Kahn seem like a Beckett monosyllablist – proffered urban-scaled fantasy projects so grandiose and impractical that no amount of technical know-how could have brought them to fruition. But he inspired an international generation of visionary designers and planners – particularly Team X in Britain and the Metabolists in Japan – who executed a number of his concepts as he never could.

Several schemes by Fuller's followers are not in the Whitney's poorly presented and inadequately argued overview, but instead show up in the best architectural exhibition held in many years at MoMA (or anywhere else, for that matter). Although *Home Delivery* ranges from a century before and a half-century after the postwar decades when Saarinen, Fuller, and Lautner were riding high, this thoughtful, thematic investigation of one of Modernism's grandest obsessions – architectural prefabrication – conveys the same uplifting aura of open-ended possibility promoted by those three true believers in tomorrow.

Organized by MoMA's chief curator of architecture and design, Barry Bergdoll (assisted by Peter Christensen), *Home Delivery* delivers not only scholarly depth and critical insight, but revives MoMA's most historic contribution to architectural museology: the construction of full-scale model houses. This proven solution to architectural illiteracy lets nonprofessionals experience the real thing rather than simulacra – models, drawings, photos, or partial mock-ups found in routine gallery presentations of the building art.

At the *Home Delivery* press preview, Bergdoll wryly alluded to his having learned the hard way why prefabrication was never adopted as fully as its pioneering proponents predicted: The daunting economics of constructing the show's five relatively modest demonstration houses brought home to him, as no amount of theoretical contemplation could, the financial facts of life that have kept a long-cherished architectural dream from becoming a widespread reality. But that does not prevent this exhilarating exhibition – undeceived and equally informed by its subject's checkered past and uncertain future – from communicating the hope for a better world that lies at the heart of the still-unfinished Modernist project. ■

ONLINE: What do *you* think of Lautner's work? Respond at ***archrecord.com/community/critique***.

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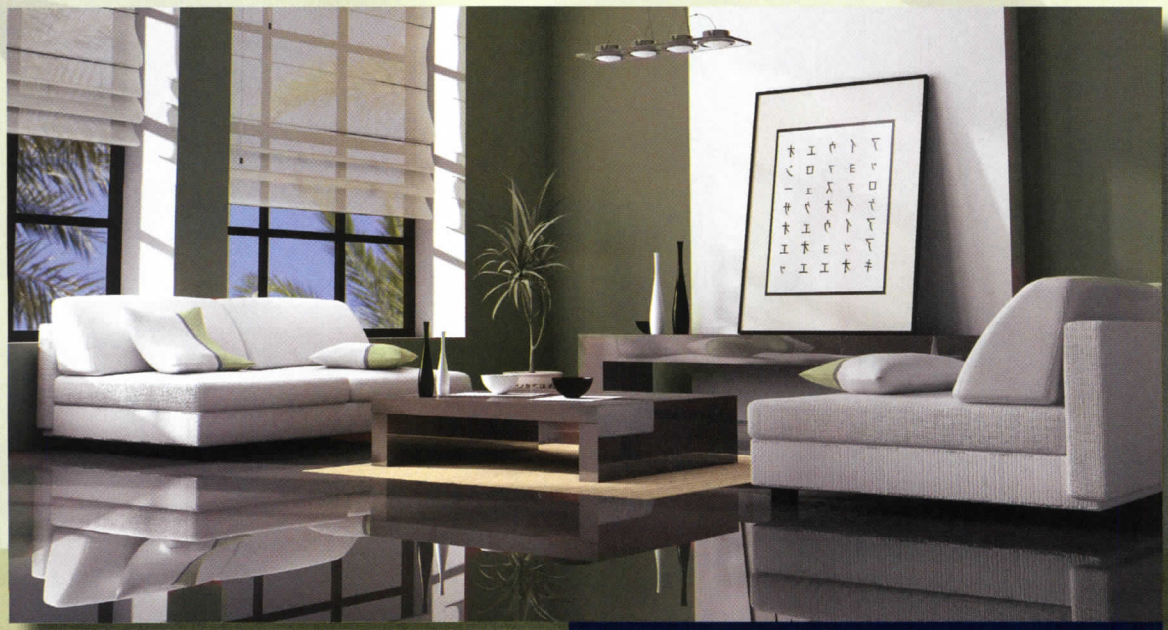

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CIRCLE 38

Trying to understand the land of Cheever and Updike

Books

Architecture and Suburbia: From English Villa to American Dream House, 1690-2000, *by John Archer. Minneapolis: University of Minnesota Press, 2008, 496 pages, $28.*

Sprawling Places, *by David Kolb. Athens, Georgia: University of Georgia Press, 2008, 267 pages, $23.*

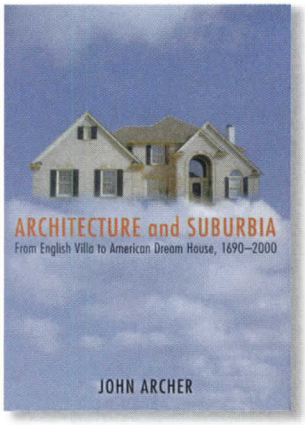
Edible Estates: Attack on the Front Lawn, *by Fritz Haeg. New York: Metropolis Books, 2008, 128 pages, $25.*

Worlds Away: New Suburban Landscapes, *edited by Andrew Blauvelt, Minneapolis: Walker Art Center, 2008, 336 pages, $35.*

A brilliant scene in Monty Python's *Life of Brian* finds a crowd chanting, in complete unison, "We are all individuals! We are all individuals!" One man, standing slightly aside, says, as if perplexed, "I'm not."

Scholars, writers, artists, architects, urbanists, and now, a subset of thinkers we could just as well call suburbanists, seem to be in the same situation. Entranced by the idea that citizens – suburban, rural, and urban alike – are all convinced that the suburbs are all the same, they shout, together, "The suburbs are all individuals!"

Four recent books – two by academics, two not – address that individuality of sameness of the



suburb: how it came to be, what it can be, what it could be, and how we can (and should) look at it. Three of the books address the suburbs as fact and seem to say, "History happened, we're here, now let's play with it." But what is that history?

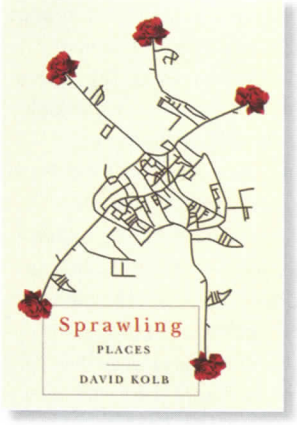
Read John Archer's book *Architecture and Suburbia* to find out. Really. Read it. Ignore the standard-sounding title, its bland cover, its academic origins, the fact that it has footnotes. It is quietly fascinating, engagingly thorough, and completely riveting. Archer's narrative takes social history and renders it architectural, explaining how a 17th-century interest in notions of selfhood turns into an 18th-century obsession with privies, and then transforms, centuries later, into that developed, same old suburb.

Ideas we take for granted – the family that eats dinner together stays together, separate bathrooms save a marriage – are traced back here, not only philosophically and historically, but visually, as the book is full of plans and sections and illustrations that show exactly how Enlightenment philosophy translated into a room for the resident male, or how General Electric's need to sell more stoves turned into the American obsession with "the dream house."

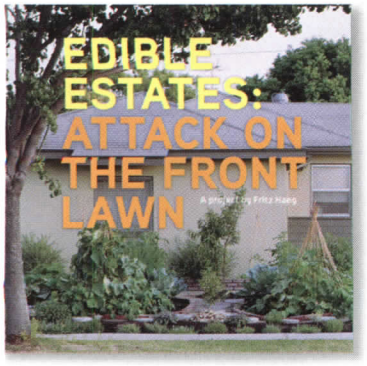
Architecture and Suburbia is not only about architecture and suburbia. It is about how we think, how we live, and how we want to live. It is about how architecture – even when it might not look like much – is the outward articulation of our deepest questions, a physical sign of our search for answers, and, in the end, a symbol of it all.

The philosopher David Kolb is entranced by the symbol. "Suburbs are not monolithic," he writes in his new book *Sprawling Places*. This tract-tome, though, sure is. Kolb's main point – that suburbs are much more complex than we think, and should not be so easily dismissed (although who, exactly, is dismissing them is never thoroughly explained) – is a good one, and worthwhile, but he takes far too much (sprawling) time to get there. Early chapters discuss place as opposed to location as opposed to locale, complexity as opposed to complication, thickness versus thinness, nonplace versus space. Kolb describes the social construction of place – to paraphrase, you can take your shirt off in the park, but not in the courtroom, and therefore place is a condition! – but then goes off on a tangent to Disneyland and how Paris, while themed, is different.

Kolb loosely offers suggestions for how to improve our understanding of the suburbs. And somewhere in this book he delineates, though not very clearly, three misinterpretations of suburban life and five "tactics" (such as, "increase the nonlinearity of a place") for how to fix these places. But more to the point, *Sprawling Places* offers a snapshot of the way things are, or can be read to be, or could be. "Just as we need to live themed places more broadly than



their themes define, so we need to live suburban communities in a more porous and connected way than standard images of suburbia suggest," Kolb writes, in what is, really, an extremely porous sentence. *Sprawling Places* is meant to be a celebration of large-scale complexity, of the hidden interpretability of places that scholars – such as Saskia Sassen and Stan Allen, both cited here – tend to be fascinated with yet unable to define. Kolb's points, when findable,



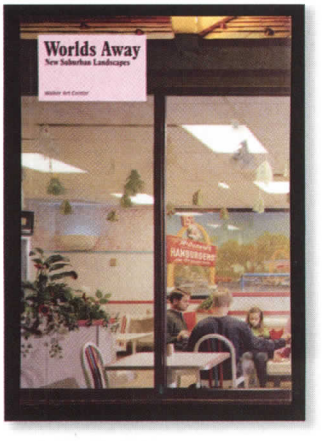
are interesting; his arguments, when unpacked, are relevant. Unfortunately, the book itself is all just a little too needlessly and impenetrably complicated.

A palate cleanser, the artist Fritz Haeg's book *Edible Estates* is nominally a straightforward account of Haeg's turn-the-American-front-lawn-into-a-small-farm project, and practically a deeply polemical reminder of the individuality that flourishes in what we like to imagine as a cookie-cutter suburban world. The second section of the book – a close look at four Regional Prototype Gardens – is most enthralling. Here we see what goes on in front of closed doors in towns like Salina, Kansas, and Lakewood, California, and Kolb would be shocked. It turns out that people, even those who live in developments, are adventurous, and that front lawns are very easily turned into edible gardens; all it takes is a little time, a few machines, plants, some dirt, a commitment to watering, and the support of a local arts institution.

Edible Estates blends art and community activism, architecture and social change. It is a profoundly American project in its dreaminess and ambition and, most of all, in its individuality. It is not an attack on the front lawn. It is an attack on our sanctification of the idea of sameness.

Further attacks, interventions, approaches, and pictures are collected in *Worlds Away: New Suburban Landscapes*, a book that accompanies an exhibition of the same name that originated at the Walker Art Center in Minneapolis earlier this year (and makes its way to the very livable – and urban! – Pittsburgh in October). Essays by John Archer, Malcolm Gladwell, and Virginia Postrel – on, respectively, the nonoxymoronity of suburban aesthetics, the Viennese inventor of the American mall, and why chain stores are good – share space with glossy pages of art projects and interviews with artists.

Julia Christensen, in her conversation with editor Andrew Blauvelt about her Big Box Afterlife project, describes the freedom that identifying herself as an artist gives her, both in executing the project



and in her exchanges with the local communities. It is a microcosm of the divide that appears throughout this book – between artistic interpretations of the suburbs and architectural representations of they it could be.

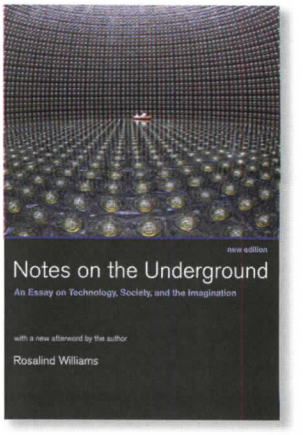
The artists win; their freedom to photograph what they want, to write about what they want, and in a way, to argue what they want, shows that they are the unhampered individuals. The architects here have some great ideas – Interboro's proposal for embracing the grassroots operations of an abandoned mall parking lot is one; Lewis Tsurumaki Lewis's adaptive reinterpretation of the big box landscape into a suburban layout is another. But it is the art – Gregory Crewsdon's intricately staged photographs, Stephanie Nagorka's Home Depot aisle project, and Matthew Moore's organic rearticulations of tract developments – that cuts much more viscerally into an entrenched sense of oppressive malaise.

Each of these projects was done individually, the contributor operating on his or her own (with, one assumes, some curatorial input). In a sense, though, reading the book from front to back can feel like listening to a crowd shouting about its individuality. Here and there, though, if we look and read the suburbs – and the books about them – carefully enough, we will hear that small voice that says "I'm not like them!" becoming louder and louder. Soon, we might even want to listen. *Eva Hagberg*

Notes on the Underground: An Essay on Technology, Society, and the Imagination, *by Rosalind Williams. Cambridge: MIT Press, 2008, 283 pages, $20.*

What does life in an increasingly manufactured and technology-dependent environment do to our psyches and the way we relate to each other, and what might be the political implications? These are the main questions Rosalind Williams asks in *Notes on the Underground*. For answers, she looks to subterranean worlds, man-made environments in which technology has replaced nature and life is reduced through radical abstraction and simplification.

Williams posits that since the 19th century, narratives about sealed and finite underground worlds – real or imagined – have provided a prophetic view into our environmental future. In fluid, straightforward prose, she explores the subterranean stories of Jules Verne's *Les Indes Noires* (1877), in which miners build a subterranean utopian Coal Town, H.G. Wells's *The Time Machine* (1895); and writings about the underground by Poe, E.M. Forster, Bulwer-Lytton, and others.



The author concludes not so much with answers about where we are and where we're going as with an awareness of contradictions ("while we grieve for a lost way of life, we rejoice in a new one") and anxious forebodings. The sense of reality suffers in subterranean settings where things seem to be done by magic; communal bonds weaken as ties between classes and individuals take second place to technological connections; personal autonomy lessens as technology encroaches on privacy; and glitches in complex technologies can create interruptions in all kinds of vital services that eventually threaten the social structure. Williams points out, however, that most often it is social malfunctions – war, revolution, terrorism – that prove fatal to subterranean societies such as the one Verne imagined.

In the afterword to this new edition (the first came out in 1992), Williams writes that our environment will inevitably become less natural; the question is whether it will also become less human. "The goal of environmental politics," she writes, "is not saving the planet, but creating (and constantly recreating) a human world." *Andrea Oppenheimer Dean*

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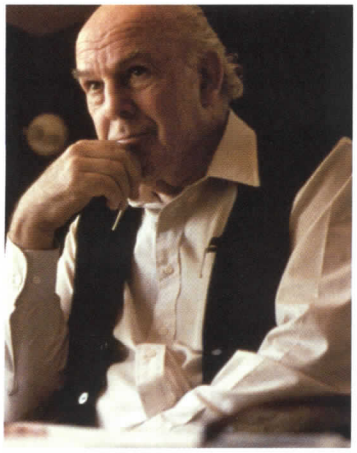
CIRCLE 40

John Lautner retrospective opens in Los Angeles

Exhibitions

By Sarah Amelar



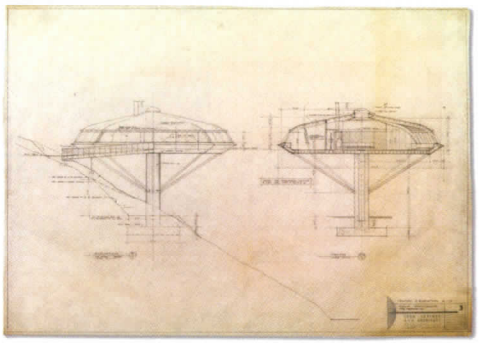
Between Earth and Heaven: The Architecture of John Lautner. *Curated by Nicholas Olsberg and Frank Escher. At the Hammer Museum, Los Angeles, through October 1, 2008; traveling to U.S. and international venues.*

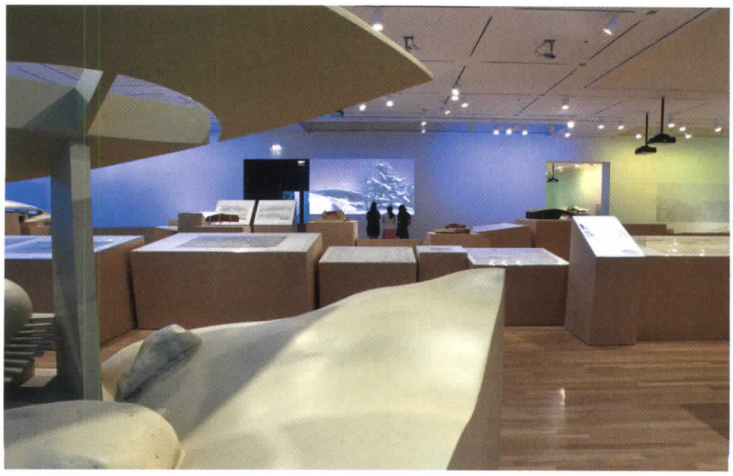
Often likened to a flying saucer, floating atop a tall concrete stalk, Chemosphere House (1960) may be architect John Lautner's most extreme, visible, and famous work. Hovering high in the Hollywood Hills, the house "starred" in such films as *Body Double* (1981) and *Charlie's Angels* (2000). Reached via private funicular and offering nearly 300-degree views of the city below, Chemosphere has been perennially cast as an extravagant bachelor pad, a rich boy's toy, a glamorized, Space Age symbol of Hollywood dystopia. Both on and off the silver screen, other Lautner houses – striking for their sweeping gestures, experimental features, and panoramic vistas – have hardly been immune to such public perception. But is such characterization mere caricature – the superficial vulgarization or misinterpretation of a far more meaningful architecture? That, at least, is the contention underlying *Between Earth and Heaven: The Architecture of John Lautner*, a show originating at Los Angeles's Hammer Museum.

As Hammer director Ann Philbin emphatically states in the catalog: "This exhibition aims to set the record straight." The architect's "fascination with new shapes and structures," she adds, "had nothing to do with Space Age futurism, movieland glamour, or virtuoso engineering, but came from his determination to humanize spaces, and create an endlessly varied organic poetry. This was a profoundly serious agenda."

So, while the show focuses on the essential relationship between Lautner's work and the landscape, it carries the implicit mission of redeeming his reputation as an important architect. The first thing you see in the galleries is a continual side show of the architect's photographs – not of built forms, but of vast, unpopulated natural settings. Many snapped from airplanes or other high perches, the images capture receding glaciers, surf patterns on the shore, and other sinuous geological lines that reemerge throughout the architecture.

Despite his manifest affinity for endlessly unspoiled terrain, Lautner (1911–94) spent his career in Los Angeles. Originally from northern Michigan, where, as a teen, he helped construct his family's lakeside retreat, he apprenticed under Frank Lloyd Wright through the Taliesin Fellowship, and later collaborated with him on Southern California projects. Lautner disdained L.A. as a place of "fast food, fast deals, fast everything – so ugly it made me sick." But what kept him there, he maintained, was a clientele willing to engage in his architectural experiments, and during parts of his career, a local economy robust enough to realize his vision.





John Lautner (top left). The Chemosphere House, in elevation and section (top right). The Lautner exhibition (above) features films, drawings, and models.

As the show's 16 featured projects suggest, Lautner's architecture, predominantly single-family houses, always captures views out, with a visual flow extending unbroken from a sheltered domestic scale to the infinite outdoors. Often unfurled from high vantage points out to horizon, the vistas appear from some houses as nature alone and from others as distant, boundless urban sprawl. Lautner, unlike such high Modernists as Mies and Neutra, rejected the minimal, potentially *inhabitant-exposing*, transparent box, in favor of the protected, cave-like refuges that deny views in, while acting as great observatories.

JOSHUA WHITE (RIGHT AND BOTTOM)

Likely designed from the inside out, the houses were devised to dissolve visual – though not necessarily physical – boundaries between shelter and vista. The one-room Pearlman Mountain Cabin (1957), in a California arts community, for example, produces the illusion of an interior merging with the surrounding forest, achieved through deftly pleated glass walls and tall tree trunks as structural columns. And Mar Brisas (1973), an undulant, concrete structure on a hill above Acapulco Bay, Mexico, has a watery moat that dematerializes the house's edge visually, fusing it with bay and horizon.

The topographic theme, introduced in the slide show, echoes throughout the exhibition design. Craggy, quasi-random clusters of display podiums fill the two main galleries, envisioned as a "landscape of ideas," says architect Frank Escher, the John Lautner Foundation administrator who cocurated the show, with Nicholas Olsberg, and designed it with his firm, Escher GuneWardena. The podium tops, canted at varied angles to present "casually" taped-down drawings, also suggest a drafting room. Appearing almost haphazard, this configuration has the surprising effect of focusing the viewer intimately on one single object at a time, so that your eye doesn't sweep across multiple display surfaces, as it might were they neatly aligned.

The installation also attempts to transcend the inherent limitation of most architectural exhibitions – the absence of the "real thing," the actual building (yes, drawings and models are real, but ...). To convey the spatially fluid dynamism of Lautner's architecture, the curators present the houses through motion pictures, instead of still photos. Mute short films by Murray Grigor, each focused on one of six houses, play across the gallery walls. New, large-scale section models accompany the displays, allowing you to peer through to a faint panoramic photo of the vista from that house. (Through sheer size and blandly uniform beige paint, the new models successfully distinguish themselves from Lautner's more expressive and impromptu 3D studies, but remain oddly distracting for their combination of imposing scale and lack of detail.)

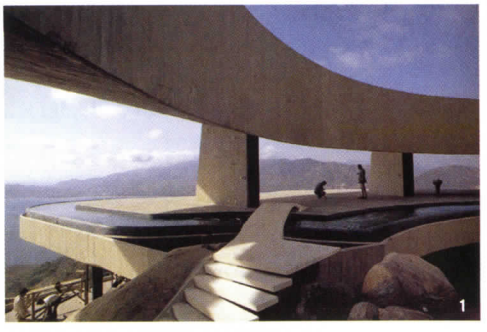
Loose yet chronological, the show quietly encourages you to make connections among objects on display. You begin to see consistent preoccupations in Lautner's work, not just the play between shelter and vista, but between groundedness and implicit flight, or "earth and heaven." The continuity of thought is most striking in an early sketch (the unbuilt Eisele Guesthouse) that anticipates the cavernous, view-embracing arcs of the architect's later career, when the technology for thin-shelled concrete became available.

However compelling those streams of ideas, the show, with its poetically fleeting films, imparts a sense of fragmentation that can leave you hungry for a straightforward photomural of a house – or better yet, a site visit. (The Hammer has arranged a limited number of fund-raising tours to these private homes.) In that respect, the exhibition may best suit viewers already familiar with the work.

And though intriguing building/landscape connections emerge, the question still lingers as to whether this architecture is truly free, as the catalog suggests, of dramatic spectacle and luxuriant excess. One could validly argue that Lautner's clients were mostly middle class, and only in recent years have the houses become trophies for wealthy owners. And while Lautner clearly admired the virtuoso architect-engineers and engineers of his time, including Pier Luigi Nervi, Frei Otto, and Felix Candela, perhaps he genuinely adopted their structural innovations as a means to desired spatial qualities, not for innovation's own sake or appearance.

At the same time, some of his framed vistas, boldly expressive arcs, cantilevers, and sculptural folds have an undeniably breathtaking drama, conferring the powerful sense of surveying all that lies below (maybe one reason these novel houses have been irresistible to movie location scouts). Though cocurator Olsberg champions Lautner as "widely misunderstood and misrepresented," he reluctantly admits, "not all the work succeeds – and then, it risks vulgarity and flamboyance." In the designer's mature middle period, when he finally had clients with money, Olsberg concedes, the architecture got "a little too extravagant in its dramatic expression – too grandiose and forceful for my taste." But, Olsberg adds, "I have the same problem with Beethoven's middle period – too heroic. And I still consider Beethoven a great composer."

Detractors aside, when the architecture succeeds, it can be sublime. And then, the frigatebirds hovering motionlessly over Mar Brisas – riding the thermal air currents that rise from its roof – embody, as Olsberg suggests, a larger metaphor for Lautner's work: the rare achievement of "flight without motion." ■



(1) Mar Brisas (1973), in Acapulco, is of poured concrete, with a moat that merges visually with bay and horizon. (2,3) Like drafting tables, the show's tilted surfaces display drawings, while films of the houses play across gallery walls. (4) The Turner Residence (1982), in Colorado.

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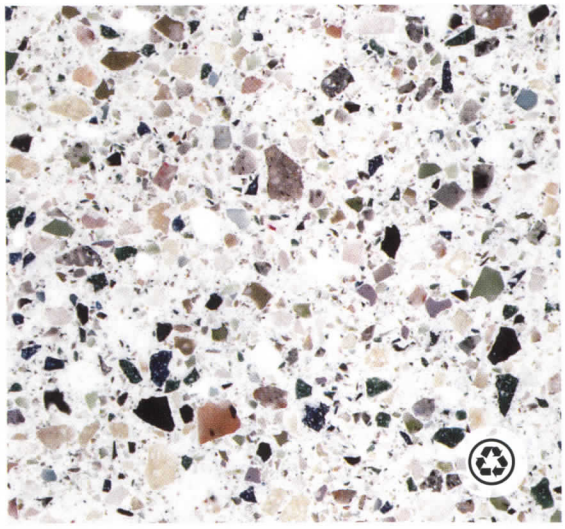

A project like Tully Community Branch of the San Jose Public Libraries has a life for me, a beginning and end, and it is part of me. There is a community process around every new library, and the local people wanted it to hearken back to the original family apricot orchard on the site. "This isn't your father's library," they told us. "Challenge the idea." In the middle of Silicon Valley, the library has an agrarian nature, from the barn in the kids' area to the finishes we used. Avonite's Kaleidoscope recycled product brings an earthy, organic quality we were looking for, and combining it with Avonite's Antique Glass gives the space an extra spark. The client and public love it!

I am Anne Sherwood from Anderson Brulé Architects, and I bring new ideas to fruition. Tully Library is now part of my life.

ANNE SHERWOOD

Anderson Brulé Architects ❊ San José, California

CIRCLE 42

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Mediation for Architects 101

Practice Matters

By B.J. Novitski

Disputes happen; whether over assigning responsibility for mistakes or rectifying payment schedules, they're a fact of life in the construction industry. But they need not lead to bitterness or lengthy and expensive court battles. Standard AIA contracts provide an easier means of solution, through mediation, which gives architects, clients, contractors, and their lawyers an opportunity to take a creative, cooperative approach to problem resolution. The outcome of a mediation can be quick and relatively painless; indeed, some mediations end in a "win/win" for everyone involved.

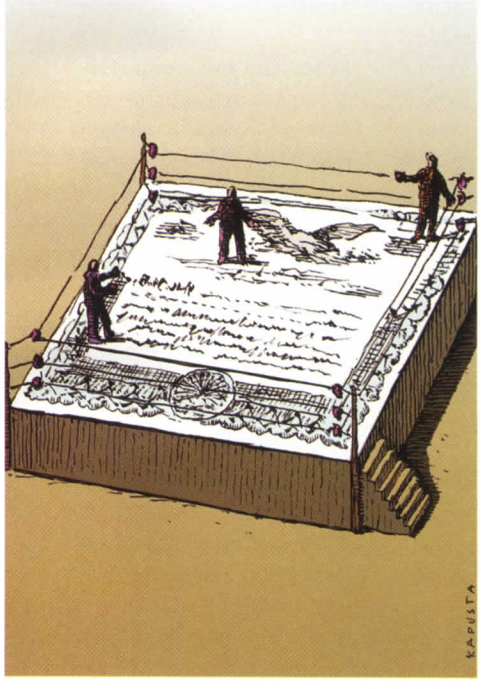
The legal climate has changed somewhat for architects who adopt the new contracts published by the AIA earlier this year [RECORD, July 2008, page 59]. Like previous contracts, A295-2008 requires the parties to conduct mediation efforts before moving to binding dispute resolution. But if mediation is unsuccessful, the latest version of the contract does not allow the parties to choose between litigation and arbitration, according to Suzanne Harness, an architect and the AIA's managing director and counsel for contract documents. "In an effort to ensure that all disputes be resolved in one proceeding (as seems appropriate for an integrated project) the owner, architect, and contractor are required to proceed to arbitration," she says.

B.J. Novitski writes about architectural practice and sustainability. She can be reached at bjn@efn.org.

The new AIA contract C195, for single purpose entities (SPEs), takes a different approach. It requires that all disputes be dealt with within the SPE. Harness explains: "SPE Members are required to make efforts to resolve all disputes amicably and through mutual consensus following the dispute resolution procedures set forth in C195. In the event they cannot reach a resolution, the matter is presented to the SPE's governance board for consideration and resolution. If the governance board is unsuccessful at resolving the dispute, it will be referred to arbitration through a dispute resolution committee for full and final resolution."

The basics

In a nutshell, mediation is a conference between opposing parties facilitated by a neutral, mutually agreed-upon mediator. The goal of the negotiation is not to assign blame and assess damages; rather, it is to find a compromise that will "make the plaintiff whole," in the words of Irvine, California-based construction-industry mediator Paul J. Weinberg. This could mean getting the building repaired, or whatever remedy is appropriate to the situation. During Weinberg's mediations, which can last a few hours or a few days, the opposing parties typically occupy separate rooms. He goes from one to the other, listening to each party explain the problems and then proposing solutions. Mediators cannot impose solutions, but ideally the parties eventually agree, and their written agreement is legally binding. If no agreement is possible, the dispute moves on to the more adversarial processes of arbitration or litigation.



The goal of mediation isn't to assign blame or assess damages but to find a way to "make the plaintiff whole."

Mediation is voluntary and cooperative in nature. The parties agree on who is to mediate, and they share in any fees and procedural costs. Unlike lawsuits, it is private and entirely confidential. On occasion, when the issues are complex, there may be two comediators, one to lead the negotiations and the other to offer technical or legal advice. According to "Preparing for Mediation," an AIA Best Practices article contributed by Victor O. Schinnerer & Company, mediators come in several flavors. A facilitator simply organizes the process and brings the various parties to the table. A communicator is more proactive in ensuring that each party's point of view is reaching the other. This role requires somewhat more experience in both mediation and in construction issues. An evaluator offers his or her opinions about the responsibility of the respective parties.

Weinberg believes good mediators strike a balance between facilitative and evaluative approaches. He explains: "I don't threaten people or impose a penalty on them. I just sit them down privately and say, 'Look, you've got some potential liability. Here's what they would throw at you in a trial.' Then they're more likely to accept a middle ground." Although mediators cannot impose solutions, the Schinnerer article notes, "A nonbinding and confidential discussion with a neutral third party can be extraordinarily helpful in evaluating the alternatives to settlement. The experienced mediator knows how to explore issues with the parties in a way that is helpful and will not compromise the position of the parties in front of one another."

ILLUSTRATION: © CORBIS

The desire to avoid litigation is understandable. Lawsuits can take months or years; they are very expensive; they draw architects' attention and energy away from their own work; and they can be emotionally draining. Moreover, juries can be unpredictable, and punitive damages can be astronomical. Mediation, by contrast, can be fast and relatively inexpensive, and there's a good possibility that the parties can emerge feeling okay – if not happy – about the negotiated solution. In some cases, though, litigation is the only option. There may be legal issues that only a court can decide, or the case may call for a precedent-setting ruling of industrywide importance. Or extensive "discovery," a normal and time-consuming part of litigation, may be needed to enable opposing parties to uncover background information and best present their own positions.

Besides mediation, another alternative dispute-resolution technique is arbitration. As laid out in the standard AIA contracts, arbitration occurs after mediation has failed. Like litigation, arbitration is adversarial in nature and involves the opposing parties asking one or several decision makers to weigh the evidence, make a judgment, and impose a penalty on the losing party. As in mediation, arbitration proceedings are private, and the arbitrator is chosen by the parties. Unlike in mediation, however, the decision of the arbitrator is binding, the parties must accept it, and they normally do not have the option of challenging the decision in court.

Given the many reasons mediation is a more attractive option, why aren't architects more familiar with its workings? According to mediator Weinberg, who is a lawyer and former litigator, architects too often leave the mediation process up to their attorneys. The lawyers take charge as if to say their knowledge of the law is more important to success than the architect's knowledge of construction. But mediation is not a legal process. In understanding the history of a design or construction problem, the architect has far more expertise. That knowledge should be tapped to create a compelling narrative for the mediation process, and the architect should not simply be called in at the last minute as an expert witness.

Preparing for mediation

At the AIA convention in May 2008, Weinberg gave a seminar on mediation in which he offered advice on preparation and negotiation. He urged architects to become involved early and directly, not to defer to the legal team. Properly equipped with information about the case, architects improve their chances for a positive outcome, thus avoiding the suffering and expense of litigation.

Understanding the history of the problem may be a simple matter of reviewing the "paper trail." Pertinent drawings, meeting minutes, requests for information, cut sheets, change orders, and job-site reports and photographs can combine to form a picture that will explain, even to a lay person, what went wrong and why. Weinberg advises architects to organize these documents in a tabbed, indexed binder, along with the original contract, any relevant correspondence, and affidavits or declarations by contractor and subcontractors.

The architect should also write an explanatory, chronological narrative to tie this collection of exhibits into a coherent story of how the problem occurred and what the architect did about it. This helps the architect's lawyer focus on the crux of the problem and anticipate where the core conflict will lie, and know ahead of time who the pertinent witnesses should be. In addition, Weinberg says, "If these things are all explained to the lawyer ahead of time, the lawyer can explain them that much better to the mediator and to the opposing parties. You'll come across as better prepared and have a much stronger case toward a settlement." The opposing party will realize that if mediation fails and the case goes to litigation, this narrative is what a jury will hear, too.

Depending on the circumstances, the architect may want to identify outside experts who can support the case through a deposition or by appearing at the mediation. For instance, a locally known and respected architect could testify about professional "standard of care." Or an engineer could comment on the scope of work an engineer is expected to do, in contrast to what the architect is required to do. If the architect and his or her lawyer have reviewed the project history and identified the key causes of the problem, they can ensure that the relevant subcontractors or suppliers are involved. He notes: "Many times, what frustrates me the most as the mediator is that the people who are responsible aren't there. Either no one thought through how this happened, and they didn't make any effort to bring the responsible people there, or the architect didn't get involved in the process until very late." Because the agreement at the end of a successful mediation must be signed by the responsible parties, it's important that they be present. If all parties agree to the rules, limited discovery is possible. Weinberg says that in his experience, this is generally limited to voluntary, confidential depositions and a few basic documents.

The mediator is chosen by consensus of the opposing parties, who should all feel confident that the person is completely neutral. The mediator need not be a lawyer, because mediation is not a legal process, but some knowledge of legal and construction-related disputes is helpful. According the Schinnerer article, "There is an advantage in letting the opposing party pick the mediator as long as all parties are satisfied that the mediator is experienced, neutral, and effective. Opponents are more likely to take bad news from their own choice of mediator than from strangers."

Arriving at agreement

One major difference between mediation and litigation is that litigation can only result in monetary remedies. In mediation, however, negotiating strategies can consider creative alternatives. For instance, future relationships with clients and contractors may have a high inherent value, so saving face may be as important as avoiding payments. Weinberg has observed that an architect who wins a lawsuit may develop a reputation for being difficult to work with. This might be as harmful to a practice's reputation as losing a lawsuit. To learn more about litigant psychology, Weinberg suggests that interested architects read *The Mediation Process: Practical Strategies for Resolving Conflict*, by Christopher W. Moore (John Wiley and Sons: 2003).

To maintain good feelings among all parties, and to aim for a "win/win" outcome to the mediation, architects should consider alternative solutions. For instance, the architect can offer a client additional services at no charge to get the problem repaired. This way, says Weinberg, "the architect isn't out of pocket more money, their insurance premiums are far less likely to go up, and their reputation is saved. You'd never get that out of litigation." He also persuades clients that their best solution is to get the problem fixed and not insist on punitive or delay damages. They may not end up with as much money as if the case had gone to litigation, but they can avoid the cost, inconvenience, and aggravation of spending months or years in court.

As more firms adopt the latest contract forms, and as states push for mediation to relieve courts overloaded with civil lawsuits, look for national trends to move in this direction. ■

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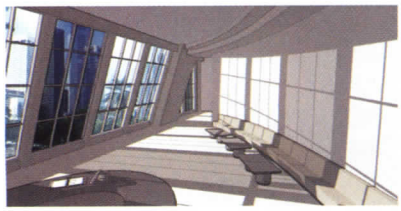

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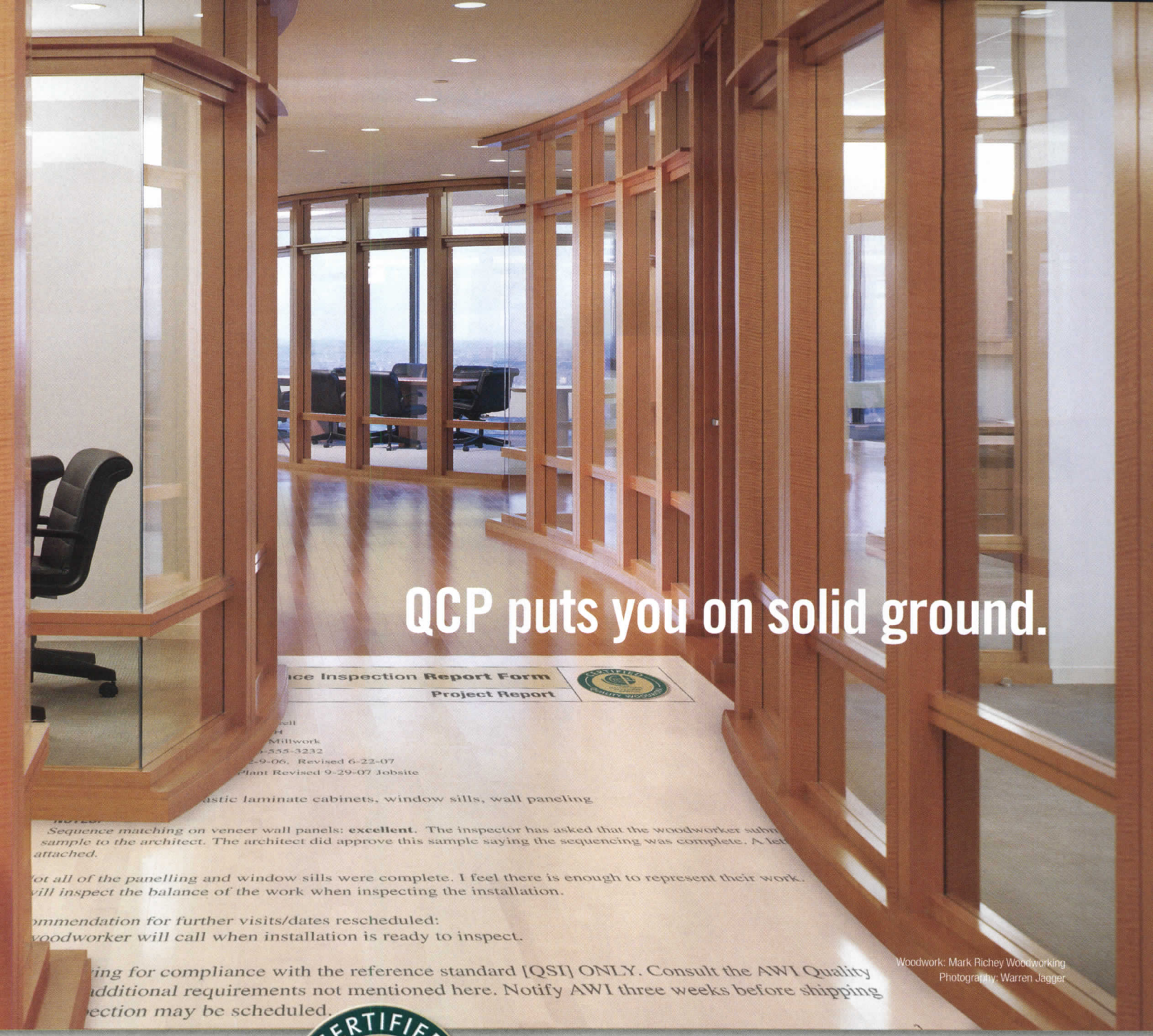

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Trade Show Review Chicago • NeoCon

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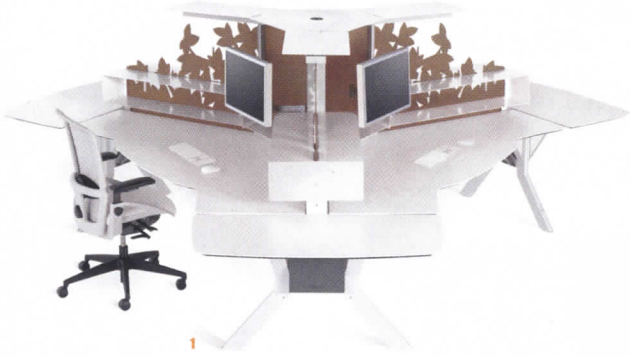

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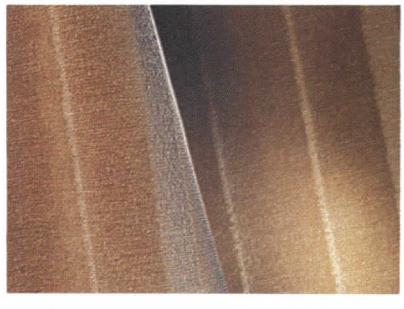

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1 Whistle while you work Hum is a series of efficient environments able to instantly adapt to individual or teamwork needs. Its four core elements – Personal Workspaces, See Me Screens, Terraces, and Meet Me Spaces – are enhanced by storage, accessory, and material options. Kimball Office, Jasper, Ind. www.kimballoffice.com **CIRCLE 200**

2 Cut and sew Hella Jongerius has created a third dimension in textiles for her collection, Layers, by merging wool felt with patterned embroidery. The top layer is cut away from the stitching by hand to reveal a solid tonal or contrasting underlayer. Three abstract patterns recall natural landscapes. Maharam, New York City. www.maharam.com **CIRCLE 201**

3 Office chameleon Barcelona-based Mario Ruiz designed neutral yet exquisite surprises into his case-good line, Linea. Floating plinths, lighter woods repeating proportions, and thin slats for glass shelves are collectively stunning without sacrificing function. HBF Furniture, Hickory, N.C. www.hbf.com **CIRCLE 202**

4 Save me a seat Synapse, Carl Gustav Magnusson's wood side chair, ships flat in five pieces that assemble in as many minutes. All parts are replaceable and easily separated for recycling. Solid beech or maple frames are sourced from sustainable forests. Teknion, Mt. Laurel, N.J. www.teknion.com **CIRCLE 203**

5 That's a wrap Method is clearly a different modular lounge system with smart details designed into a few trim components. Seat cushions can be backless, armless, even opposing, but wrap the edge as a sleek finish to natural woods and white surfaces. Davis, Highpoint, N.C. www.davisfurniture.com **CIRCLE 204**

6 Line dancing The broad horizontal lines of Gradation broadloom jump forward and back along its 180" linear repeat in high-density tufting. Constantine Commercial, Dalton, Ga. www.constantine-carpet.com **CIRCLE 205**

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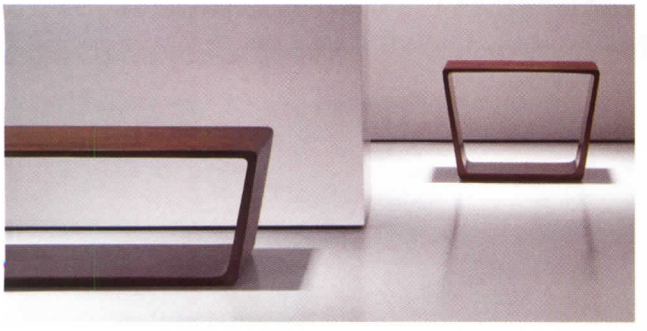

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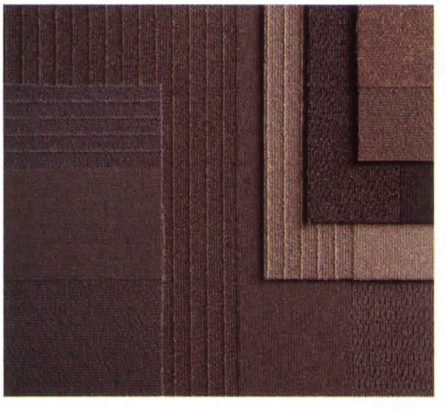

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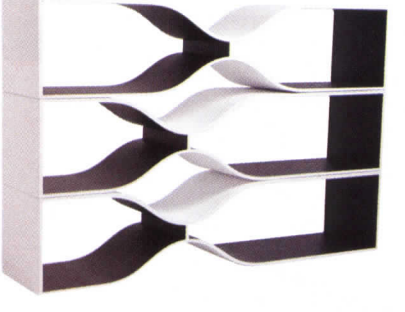

12

13

7 Missing link Purity and continuity of form make Chase Wills' Linc occasional table a strong but quiet piece that plays well with others. Available in two sizes and a variety of wood and lacquer finishes. Bernhardt Design, Lenoir, N.C. www.bernhardtdesign.com CIRCLE 206

8 Thrice as nice Suzanne Tick's Manufactured Landscapes interprets images of layered topographies in textural carpet tile. To boot, its mix of three pattern variations speak the same linear language despite orientation. Tandus US, Dalton, Ga. www.tandus.com CIRCLE 207

9 Scion of the time Inspired by vintage art glass and textiles, Scion is a Type II, Class A fire-rated, lightweight, 100 percent polyester wall covering with an Ecore Advanced Wall Technology substrate. It is Greenguard certified and 100 percent recyclable. Wallcovering Source, Dallas, Tex. www.wallcoveringsource.net CIRCLE 208

10 Polished rocks These precast, air-cured terrazzo tiles put a contemporary and convenient spin on a classic. Made of an earthy mix of Australian granite aggregate in a natural-oxide-colored matrix, they are notable for their beauty and strength. Sadlerstone, San Clemente, Calif. www.sadlerstone.com CIRCLE 209

11 Office pets For sitting, the Luxy Bea chair's curvaceous shell encloses ergonomic technology, such as a synchro mechanism and push-and-click retractable controls. The U.F.O. footrest is a cast-polyethylene disc designed for correct seating posture in any chair. Luxy, Washington Depot, Conn. www.luxy.com CIRCLE 210

12 Catch a wave Designed by Nicolai Czumaj-Bront of the Haworth Design Studio, NC-B Resonate's storage elements can be layered up to three high in various configurations of elegantly balanced space division. Haworth, Holland, Mich. www.haworth.com CIRCLE 211

13 Special treat Chris Howker's cool stainless-steel Dip and Double Dip benches have a sandblasted finish and are easily maintained. B&B Italia, New York City. www.bebitalia.it CIRCLE 212

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CIRCLE 48

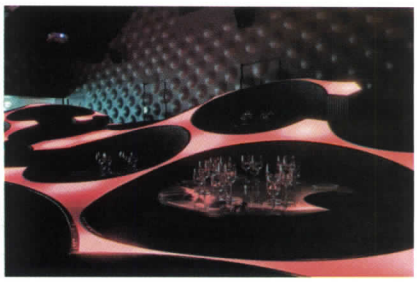
Snapshot

Embedded LEDs change color, linking the undulating banquettes to each other. Plaster walls textured with a gumdroplike surface improve acoustics in the lounge.

Blue Frog Lounge makes the leap for entertainment

By Jennifer Richter

Old-fashioned ways often prove a more effective means to an end than new technologies and innovative methods. Such is the case with the Blue Frog Acoustic Lounge and Studios, located in an early-20th-century warehouse in Mumbai's up-and-coming old mill district, and designed by Chris Lee and Kapil Gupta [RECORD, Design Vanguard, December 2005, page 77], principals of London and India-based Serie Architects (formerly Chris Lee Architects and Contemporary Urban).



Given 10,000 square feet of raw space, Lee and Gupta were asked by the owners to design a multipurpose space that would function as a lounge, performance stage, restaurant, bar, and recording studios. In "collapsing" the program requirements, as Lee describes it, the architects arrived at the undulating booth insert – the project's principal design element.

Arranged on a pitch for optimal viewing, the acrylic-resin-topped banquets, illuminated from within with LEDs, glow in alternating shades of blue, red, and white, "retaining the presence of the architecture in the midst of a state-of-the-art sound-and-light show," explain the architects. Applying a U-shaped configuration for the booths, the partners created a versatile open center that can serve as either a stage or gathering area.

Lee and Gupta, who had originally planned to employ 3D digital fabrication for the project, quickly realized that working on-site with local contractors would save time and money. Serendipitously, this collaboration led to the discovery that the geometries of the booths – made of wood blocks sandwiched between two layers of plywood, clad with mahogany fluting on their sides, and topped with acrylic-resin sheeting – "lend themselves to a structural validity," says Lee, obviating the previously perceived necessity for an internal supportive framework.

In creating an interior that addresses the varied functions of a single space, the architects, using time-tested construction techniques, have brought something altogether new to the city of Mumbai, the cultural and entertainment center of India. ■

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2008 Terrazzo Honor Awards

National Terrazzo & Mosaic Association 2008 Honor Awards

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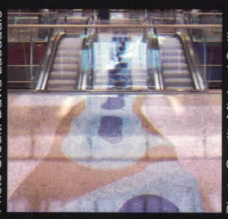

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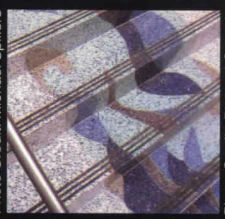

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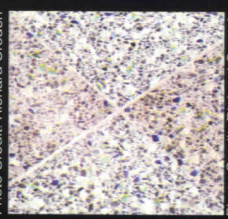


Photo Credit: Richard Crouch

Photo Credit: Richard Crouch

Kansas City International Airport - Consolidated Rental Car - Customer Service Building

Kansas City, Missouri

Architect
Bucher Willis Ratliff Corporation
Kansas City, Missouri

Designer/Artist
Coover Clark & Associates, Inc.
Denver, Colorado

Photo Credit: Michael Spillers

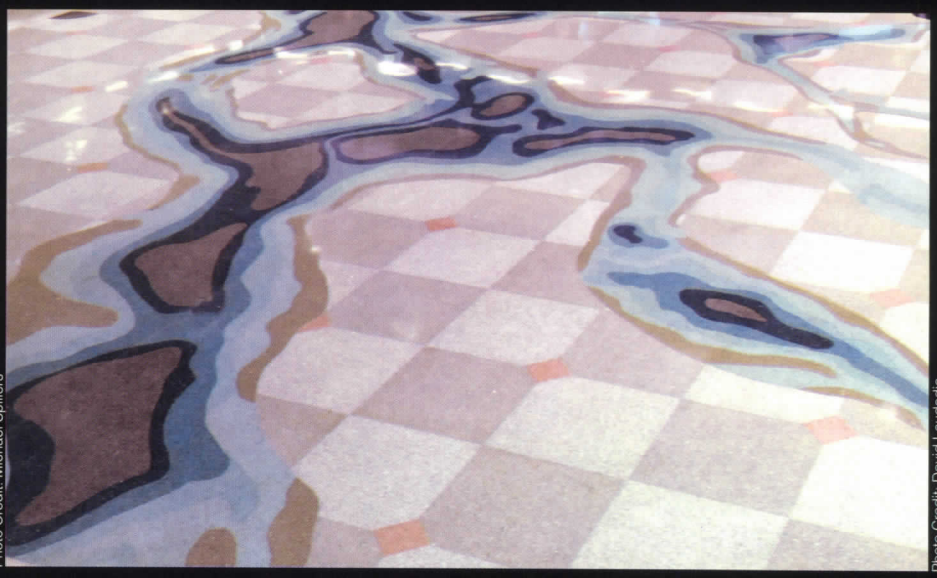
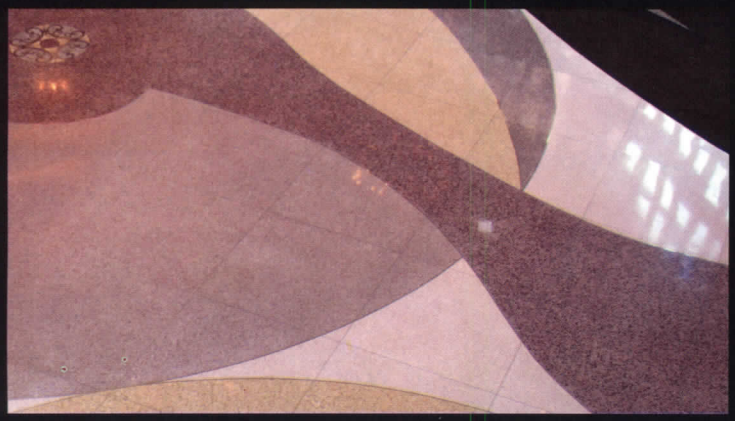


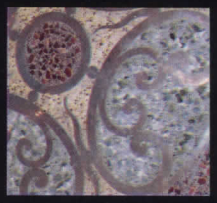
Photo Credit: David Laudadio

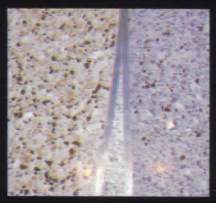


National Terrazzo & Mosaic Association – 2008 Honor Award
Argosy Kansas City Hotel *Kansas City, Missouri*

Architect
Peckman, Guyton, Albers & Viets, Inc.
Westwood, Kansas

Designer/Artist
DesignPlan, Inc.
Indianpolis, Indiana





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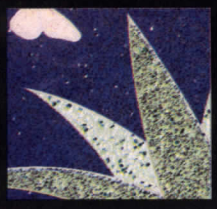
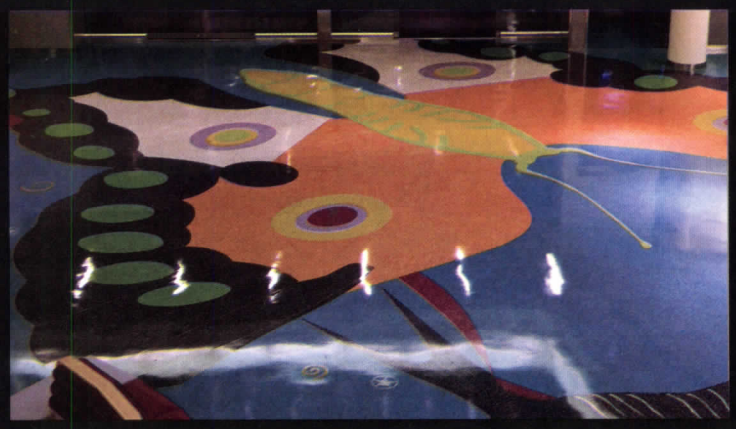
National Terrazzo & Mosaic Association – 2008 Honor Award
Camelback Road Pedestrian Underpass *Phoenix, Arizona*



Architect
Peterson Design

Designer/Artist
Roberto Behar &
Rosario Marquardt
R&R Studios
Miami Beach, Florida



National Terrazzo & Mosaic Association – 2008 Honor Award
The Childern's Hospital at Fitzsimmons *Aurora, Colorado*

Architect
Zimmer Gunsul
Frasca Partnership
Portland, Oregon

Designer/Artist
Carolyn Braaksma
Braaksma Design, Inc.
Denver, Colorado

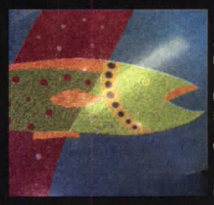
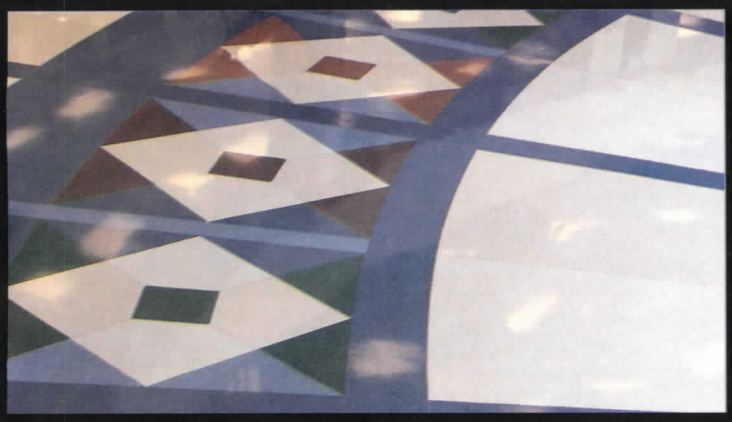


Photo Credit: Pete Eckert

National Terrazzo & Mosaic Association – 2008 Honor Award
Eisai Research Institute *Andover, Massachusetts*

Photo Credit: Ferd Morgan & Leslie Carrio

Architect
Ellenzweig Associates, Inc.
Cambridge, Massachusettes



National Terrazzo & Mosaic Association – 2008 Honor Award
Franklin Community High School *Franklin, Indiana*

Architect
InterDesign
Indianapolis, Indiana

Designer/Artist
InterDesign
Indianapolis, Indiana

GRIZZLY CUBS

FRANKLIN COMMUNITY HIGH SCHOOL
FAITH CULTURE HOPE SERVICE

National Terrazzo & Mosaic Association – 2008 Honor Award
Mayo Clinic *Jacksonville, Florida*

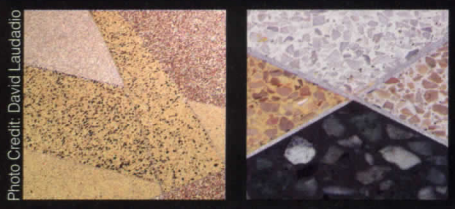


Photo Credit: David Laudadio

Architect
Perkins & Will Architects
Atlanta, Georgia

National Terrazzo & Mosaic Association – 2008 Honor Award
Metropolitan Transportation Authority
El Monte Facility *El Monte, California*

Architect
Kennard Design Group
Los Angeles, California

Designer/Artist
Mark Lere
Glendale, California

National Terrazzo & Mosaic Association – 2008 Honor Award
Massachusetts Institute of Technology
Green Center *Cambridge, Massachusetts*

Photo Credit: Leslie Carrio

Architect
Payette Associates, Inc.
Boston, Massachusetts

Designer/Artist
Sol LeWitt (deceased)

Photo Credit: George Bouret

National Terrazzo & Mosaic Association – 2008 Honor Award
Mori Hosseini College of
Hospitality Management *Daytona Beach, Florida*

Architect
Florida Architects, Inc.
Orlando, Florida

Designer/Artist
Patricia Grafton
Orlando, Florida

Photo Credit: David Laudadio, Walt Hedges, Brad Hedges

National Terrazzo & Mosaic Association – 2008 Honor Award
Twin River Casino *Lincoln, Rhode Island*

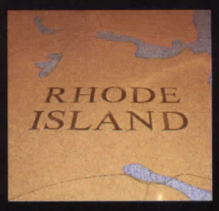


Photo Credit: J. Adametz

Architect
JCJ Architecture
Hartford, Connecticut

Designer/Artist
JCJ Architecture
Hartford, Connecticut

National Terrazzo & Mosaic Association – 2008 Honor Award
San Deigo International Airport
Yan Can Cook *San Diego, California*

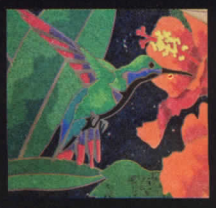
Architect
M3 Designs
Seattle, Washington

National Terrazzo & Mosaic Association –
2008 Rustic Award
Streetscape Improvements *Delray Beach, Florida*

Designer/Artist
Gary Moore
Miami, Florida

National Terrazzo & Mosaic Association – 2008 Special Art Award
David Allen Company,
Second Floor Lobby *Raleigh, North Carolina*

Designers/Artists
David Allen Company, Inc.
Vickie and Samantha Wilson
Raleigh, North Carolina



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CIRCLE 52

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JIN'S GARDEN SQUARE

Architect Ryuji Nakamura employed metaphor to create the meandering displays in this Nagoya eyewear and accessories shop.

A study in details as visual leitmotifs illustrated through the interiors of seven multifaceted firms

Themes and Variations

PHOTOGRAPHY: © DAICI ANO (THIS PAGE)

TRUTEC BUILDING

Barkow Leibinger Architects erected a lithe triangular stair to echo the faceted steel-and-glass curtain wall of an office building the firm designed in Seoul.

By Linda C. Lentz

Who was it who said, "God is in the details"? The Pavlovian response is Mies van der Rohe, who was purported to have said it during a 1959 interview with the *New York Herald Tribune*. However, a quick Google search finds this attribution was most likely predated by such celebrated forerunners as Gustave Flaubert ("*Le bon Dieu est dans le detail*"), and the German art historian Aby Warburg ("*Der liebe Gott steckt im Detail*"). Yet, while Mies may not have coined the phrase, his reference to the the aphorism regarding restraint in design does imply architectural integrity.

Architects have since been spinning this notion to suit their own purpose, as well as that of their clients—especially in terms of interior layouts, which arguably provide a considerable degree of creative freedom. To that end, elevating the mundane through an artful interior is a specialty of architect Ryuji Nakamura. In the case of Jin's Garden Square, a Nagoya, Japan, shop selling eyewear and accessories, he worked metaphorically, creating structural "plants" (shown opposite) to display the goods. These truncated, inverted pyramids, faced in walnut veneer and white melamine resin, are piled and configured with the randomness of the aloe plant that inspired them—each with a slightly variegated shape and positioning. They are at once substantial yet delicate, providing a strong, homogeneous

PHOTOGRAPHY: © CHRISTIAN RICHTERS (THIS PAGE)

SAKENOHANA

Kengo Kuma integrated tradition into an urbane London restaurant by using classic Japanese framing to create a "structural forest" made of cypress timbers and beams.

backdrop. This, explains Nakamura, is due in part to the surprise and repetition of form and material. "I didn't want to make a place composed of the [usual] displays, but to create the atmosphere of a 'botanical garden' in a shop."

Working within a structural context, the Berlin-based Barkow Leibinger Architects referred to the faceted-glass curtain wall they created for the 2008 AIA Award–winning Trutec building in Seoul—offices and showrooms for European enterprises—when designing the triangular stair connecting both levels of the two-story lobby (prior page). According to Martina Bauer, the project architect, "The building was designed with a dimensional, geometric facade, and we wanted the interior to echo that so people would have a sense of the building's geometry from within, as well." The stair also had to be fragile, she notes, "So everything would be light and transparent." The solution—a suspended stair of 15-mm-thick welded steel supported by slender rods, 8 mm in diameter, with one seemingly free corner—appears to waft like a huge Calder mobile.

For the upscale Japanese restaurant Sakenohana in London, Kengo Kuma created a structural "forest" of natural cypress timbers and beams (at left) using traditional Japanese framing, in juxtaposition to the modern stone building and cityscape it resides in. Such thematic details are important in the work of Kuma, says project architect Ryukichi Tatsuki: "We do not want to just clad walls in a material or textile, but to bring architecture into the building." And vice versa. As Tatsuki explains,

PHOTOGRAPHY: © JUNKICHI TATSUKI (THIS PAGE)

THE BLATZ CONDOS

Johnsen Schmaling Architects borrowed a bit of this historic Milwaukee brewery's past by crafting giant pivot doors with brown glass beer bottles – some of its own.

CIRCA RESTAURANT

3SIXO devised clever modular-patterned screens to shield diners from peering passersby, as well as to store wine, for this trendy Memphis eatery in a converted warehouse.

PHOTOGRAPHY: © KEVIN J. MIYAZAKI PHOTOGRAPHY (TOP TWO); JACK HORNER PHOTOGRAPHY (BOTTOM TWO)

THE RACING CLUB OF HONG KONG

CL3 Architects shed light on this exclusive club's sushi bar with laser-cut aluminum panels, backlit and backed in Plexiglas.

the architects also wanted to reveal the evocative interior to outside viewers, which made effective lighting especially important. "We wanted the framework visible from the street at night, so it would look like it was floating in space."

An element of whimsy was also taken into account by the Milwaukee firm Johnsen Schmaling Architects when converting that city's historic Blatz Brewery into a mixed-use condo. The lobby lounge features 9-foot-6-inch-wide-by-9-foot-high pivoting doors (prior page, top two) that are left open for large gatherings or closed to create intimate areas. Consisting of a welded aluminum frame, each is filled with horizontally stacked empty brown glass beer bottles—some of the defunct brewery's own—held in place by precision-milled neoprene. The resulting panels, gently illuminated on all sides, provide a textured translucence casting an amber glow.

In the case of Circa, a contemporary restaurant that opens to a mall in a converted Memphis warehouse, Providence-based 3SIX0 developed layers of patterned CNC-routed screens (prior page, bottom two) that give privacy and create intimacy for diners. Made of cherry-veneered plywood and aluminum, the screens are arranged in two rows: a simple, narrow dividing wall and a wider second row serving as a wine rack. For continuity, and ambient light, the rear wall was laser cut with the same squiggly motif and backlit. "For the passerby, the layers of 'squiggles' create a compound changing pattern, called a *moiré*, which is an optical illusion," says Kyna Leski, principal.

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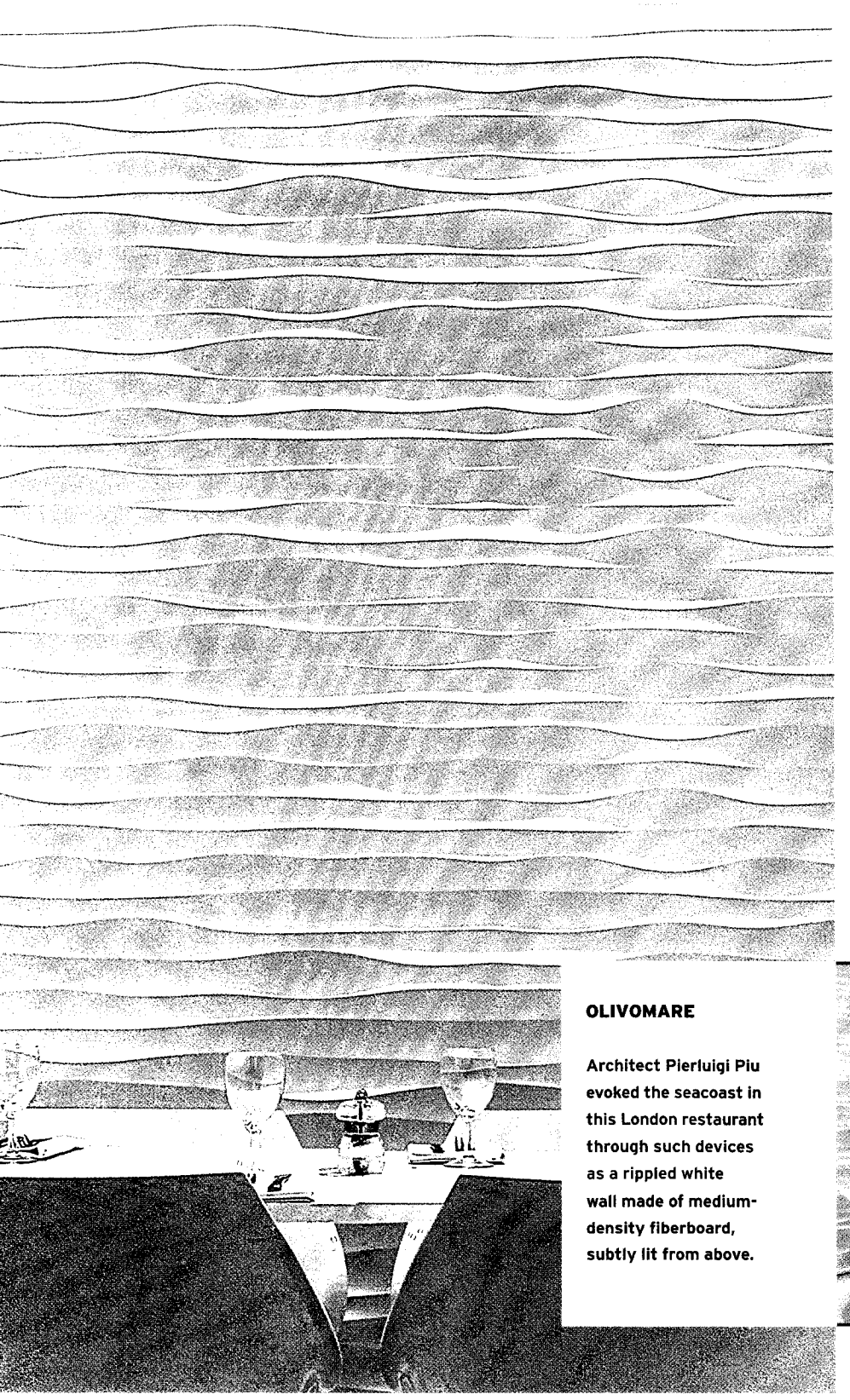
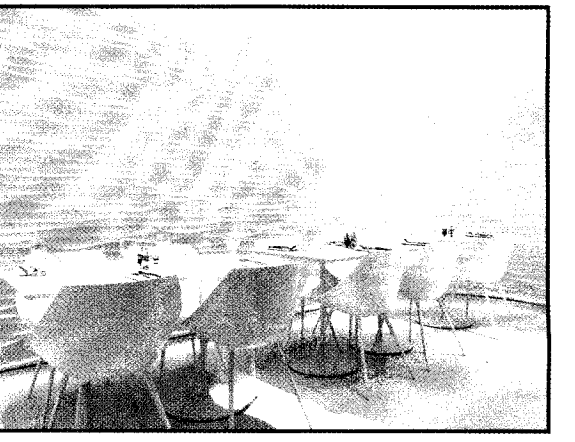


OLIVOMARE

Architect Pierluigi Piu evoked the seacoast in this London restaurant through such devices as a rippled white wall made of medium-density fiberboard, subtly lit from above.



"When one walks by, along the inside of the arcade, the pattern of the screens looks literally like flowing water. It was a nice confirmation, because one of the most hauntingly powerful presences in Memphis is the Mississippi."

With a similar end, but vastly different means, Hong Kong–based CL3 Architects created an ethereal wall (prior page) for a sushi bar inside The Racing Club of Hong Kong. "The detail is actually quite simple," says principal William Lim. "We laser cut the shapes onto aluminum panels finished with a white fluorocarbon coating, and backed them with a milky Plexiglas, which is installed 8 inches in front of the back wall. Then we put fluorescent lighting in between the Plexiglas and the back wall to achieve the glowing effect."

Olivomare, another London eatery, showcases the handiwork of Sardinian architect Pierluigi Piu, who with joiner Jonathan Perrot of the London-based shop Elevation crafted a rippled wall (left) for one of the dining rooms. Meant to evoke the wind-formed patterns on the beaches of his youth, the curvilinear wall was plotted by CAD/CNC engineers and made from 50-mm-thick MDF, finished with a white velvet-textured paint, and lit by a continuous linear fixture recessed in a perimetrical gap at the ceiling.

Such details exemplify the Miesian intent. "My aim was to design a contemporary interior that would talk of the sea with a fresh, updated language," says Piu. "Cool and ironic, sophisticated and simple." ■

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CIRCLE 57

Record Interiors 2008

Materials matter—at least if this month's Record Interiors is any indication of the broad architectural view. Each project featured is notable for the design team's thoughtful and innovative use of products—a sensual light "ribbon" crafted from simple fluorescent tubes beneath tinted translucent sheets of cast polymer, artful backlit panels of resin and punctured steel, flashing LED fixtures, glass and poured acryl walls and shelves, sanded and waxed engineered plywood, rift-sawn oak, felt, and chartreuse powder-coated aluminum.

Indeed, it appears that architects are approaching interiors with a fresh perspective in terms of their choice and use of materials. "They're starting to explore and experiment with them," says Andrew Dent, vice president of library and materials research at Material Connexion, an industry resource center.

For some, this stems from intelligent mentoring. Kathryn Dean and Charles Wolf, principals at Dean/Wolf, which designed the Virtual Light Loft, acquired their interior design sensibility in the 1980s through the refined, light-filled spaces of Louis Kahn. "We were trained by people who worked for Kahn, and they were influenced by the way he understood materials, and how he used them," notes Dean.

More recent students benefit from savvy educators who have a keen eye toward the past and the future. "We get a lot of colleges interested in trying to broaden their students' minds in terms of materials," claims Dent, whose office consults with administrators of architecture programs. Consequently, he adds, "Architects come out of their training knowing materials and what can be done with them."

Nevertheless, Dent believes that it's the profusion of viable products—especially their availability on the Internet—that has generated the most curiosity and interest. "Over the past 20 years, there have been more materials produced than ever before," he says. Moreover, he explains that advances in production processes are continually improving the performance of existing products, which allows for more application possibilities. For instance, he notes, "We have better and more intricate ways of curving plywoods."

When asked about current trends for interiors, Dent is definitive on two counts: "Sustainability is a given, but what we have seen is a maturity of sustainability and a greater understanding of what sustainability is—that it doesn't always mean natural materials." The other, not unrelated, issue is honesty in materials. "If it's plastic, use it as plastic and celebrate that fact. If you want it to look like wood, then use wood."

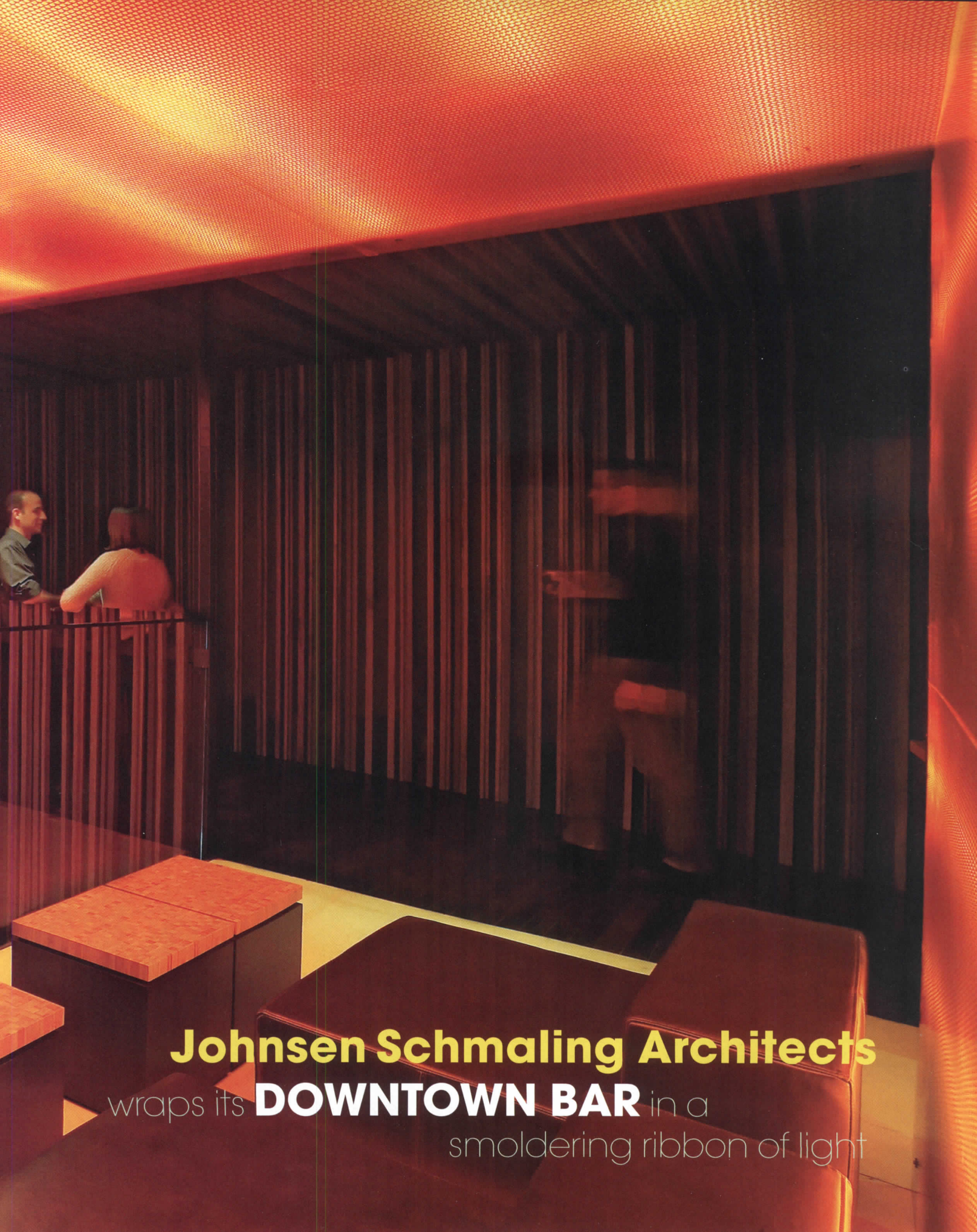
The firms featured are:

1. *Johnsen Schmaling Architects*
2. *CL3 Architects*
3. *Dean/Wolf Architects*
4. *Wonderwall*
5. *BAR/architecten Van Mourik*
6. *3SIX0*
7. *Lyn Rice Architects*

This notion of honesty, a recurring theme throughout the projects that follow—along with an understanding of what something can and cannot do—is key to the integrity and successful application of a product. "What we do [at Material Connexion] is show architects new materials and what is possible," says Dent. "We also help them understand what the limitations are." This thoughtful intelligence, along with a greater respect for the materials themselves, he concludes, will ultimately result in more effective designs. *Linda C. Lentz*

PHOTOGRAPHY: © DOUG EDMUNDS (1); EDDIE SIU (2); PETER AARON/ESTO (3); KOZO TAKAYAMA (4); ROB 'T HART FOTOGRAFIE (5); JOHN HORNER (6); MICHAEL MORAN (7)

Composed of translucent red panels, a 7-foot-wide band of light swathes this 2,700-square-foot bar in Milwaukee's Historic Third Ward, leaving every last inch aglow.



Johnsen Schmaling Architects wraps its DOWNTOWN BAR in a smoldering ribbon of light

By Josephine Minutillo

Surrounded by nothing but the dark of night, the red-hot embers of a fading campfire captivate onlookers. Similarly, Johnsen Schmaling Architects' Downtown Bar, a beacon along Milwaukee's celebrated Riverwalk, draws you in—its deep orange glow radiating over this emerging stretch of the waterway is at once alluring and menacing. For those who venture inside, that ominous first impression quickly lifts as this chic after-dinner spot offers a casual setting for drinks and dessert.

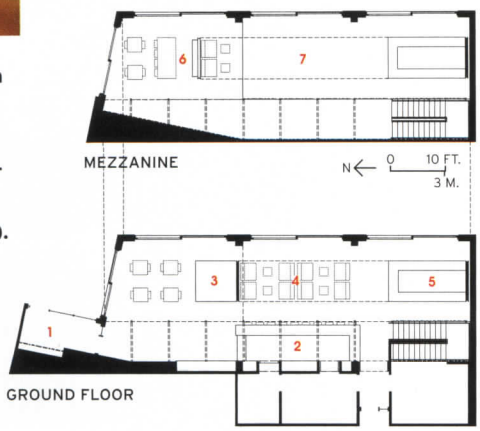
The 21-foot-high space occupies the ground level of a mixed-use development in the city's Historic Third Ward. While much of the neighborhood features delightful turn-of-the-century warehouse buildings converted into galleries, theaters, and trendy retail shops, local firm Johnsen Schmaling had to contend with an unexceptional restoration of a former cold-storage building. To contrast with these sterile surroundings, the architects crafted a space rich with tactile experiences and optical pyrotechnics—at the center of it all, a 7-foot-wide light ribbon that spans the two levels, leaving the entire space awash in sultry hues.

"The band of light remedied everything," explains Brian Johnsen, AIA. "It mediated the skewed geometry of the narrow space and connected the different programmatic elements." Rising from the ground level's concrete floor, the ribbon defines the espresso bar, then runs along the ceiling above the lounge area, concealing mechanical equipment in the process. On its way back down, the ribbon wraps up again just past the main bar to form the backdrop for a stage where small jazz ensembles regularly perform.

The exact path of the light band was determined using physical models—an old-school practice this young firm continues to employ with each new project. For its actual construction, the firm evaluated the light distribution of several translucent panels before settling on a cast-polymer, honeycomb-core sheet. The architects opted to polish the edges of the 1-inch-thick panels—tinted a custom red—and have adjoining panels simply butt against each other, enhancing the overall effect of the

Just beyond the main bar and lounge is a small stage area and additional table seating for live music performances (above).

1. *Entry*
2. *Main bar*
3. *Stage*
4. *Lounge*
5. *Espresso bar*
6. *Upper bar*
7. *Open to below*



Wood slats and low seating mimic the rhythm and geometry of the light ribbon (this page). From the exterior, the bar is a beacon of light (opposite, left). The effect is subtle during the day (opposite, right).

PHOTOGRAPHY: © DOUG EDMUNDS

ribbon's continuous course. Behind the panels, 48-inch-long, 3000K, T5 fluorescent bulbs arranged in a cadenced, staggered pattern provide the warm, dramatic light and upbeat rhythm.

That rhythm is carried over in a series of mahogany wood slats that form the rail and underside of the balcony above the main bar, and the wall and ceiling of its adjacent mezzanine. Believing the bar would cater to a post-theater crowd in a part of town rich with performance venues, the architects' heavy-handed treatment of these slats evokes a vertical abstraction of thick stage curtains.

But it was an urban quality the architects really wanted to give the space, especially considering the site has no street frontage. "This isn't like New York or a similar city where there are three or four of these kinds of spaces in a row," says Sebastian Schmaling, AIA. "We wanted to capture the random reflections of the city in an abstract way."

One very big thing the bar's location has going for it is its position on the Milwaukee River. Since plans for the bar were under way at the same time that the rest of the building was being refurbished, after a hard-fought battle with the building's core-and-shell architects, Johnsen Schmaling succeeded in opening up the 16-foot-wide storefront bays to the river by installing custom mahogany sliding doors. Guests easily move in and out, taking their drinks to the terrace and taking in the sights and sounds—from the frequent boat traffic and active drawbridge to views of a corner of the Riverwalk recently restored based on a conceptual design by artist Mary Miss.

For their efforts, Johnsen Schmaling Architects was rewarded with a unique honor—an eponymous drink, the JSA Cosmopolitan. ■

Project: *Downtown Bar, Milwaukee, Wisconsin*
Architect: *Johnsen Schmaling Architects—Brian Johnsen, AIA, and Sebastian Schmaling, AIA, principals*

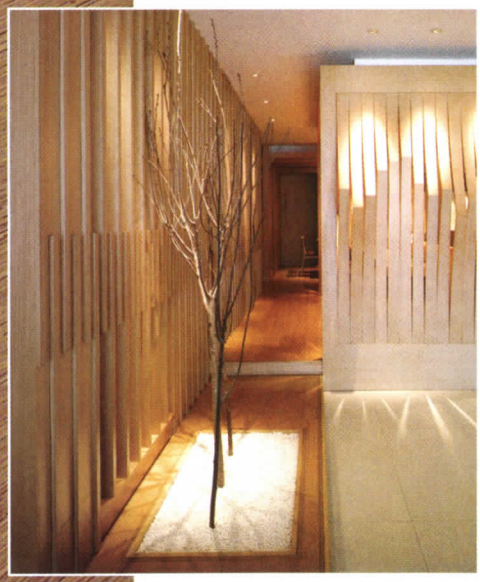
SOURCES
Woodwork: *A.J. Pietsch*
Translucent panels: *Panelite*
Interior ambient lighting: *Tube Lighting Products, Creative Systems*

ONLINE: To rate this project, go to **architecturalrecord.com/projects/**.

CL3 Architects brings Asian design traditions into the 21st century at **NISHIMURA RESTAURANT** in Beijing

By Alex Pasternack

In a place like Beijing, where anything goes, designers often bring in art installations or bold flower arrangements to add verve to upscale interiors. But in their design of Nishimura, a Japanese restaurant on the second floor of Beijing's Shangri-La Hotel, the architects at CL3 had no use for add-ons. Using mostly wood, the Hong Kong–based firm turned architecture into sculpture, creating a place that blurs the line between design and art.



A raised pool and a reception desk greet guests as they enter the restaurant (top). Sculptural cutouts enliven a plywood wall (left), while a tiny rock garden steers guests to the sushi bar (above).

"We try to avoid just buying artwork at the end of a design and putting it everywhere," says William Lim, managing director of CL3, which Shangri-La invited to redesign Nishimura as part of a larger project that included the renovation of the existing hotel and the addition of an adjacent 142-room tower. In Hong Kong, CL3 had designed two branches of Nadaman, a Japanese restaurant, in Shangri-La hotels, bringing in a consultant to contribute stark dry floral arrangements. "But here we didn't work with another artist. Instead, we built art into our design," explains Lim.

Entering the 5,400-square-foot restaurant, visitors check in with the maître d' at an oak-colored travertine desk connected to a raised pool (made of the same travertine). Through a screen of dark elm slats, they see a sake bar and get an oblique view of a 26-foot-long partition assembled from 1,000 sheets of engineered plywood. As they approach the partition, which separates the bar from a dining area, guests encounter the restaurant's coup de grâce: a pair of curvaceous openings dug into the 4-foot-thick wall. One cutout begins as a wide oval then narrows to a moon-shaped hole on the opposite side—as if a giant knot had been gracefully excised from an oversize chunk of lumber—while the other starts narrow and goes wide. The result gives patrons on both sides of the wall tantalizing, shifting views. Workers spent weeks laminating the precut sheets of plywood, then sanding and smoothing them with wax. Apart from its aesthetic attraction, the partition serves as a clever way of hiding two structural elements: a low beam and a large column.

Lim's inspirations—Japanese gardens and the changing seasons—led him to plant dried cherry trees in beds of white pebbles in places such as the *teppanyaki* room and to use a limited range of wooden tones that signal a shift from cool to warm. The sun peeks into the restaurant through a skylight in one of the dining areas.

For a mirrored wall in front of a pair of private dining rooms,

Alex Pasternack is a Beijing-based journalist who writes about architecture and design.

PHOTOGRAPHY: © EDDIE SIU

Lim created a bulbous oval made of plywood strips, a kind of analogue to the deep cutouts in the wall across from the sake bar. Around the sushi bar, he used waving strips of veneered plywood to make elegant screens. Though bound by their natural allegiances and sense of harmony, the various spaces at Nishimura combine to create what Lim calls "a multi-experiential restaurant."

"It wasn't a high-tech process, but rather more labor intensive, which makes sense for a project in China," where labor costs are lower, he says. Working on the mainland also meant constraints and liberties that ultimately served the design. At Nadaman, the Japanese restaurants in Hong Kong, CL3 had used a sophisticated blend of greens and golds, chocolate and ivory, bamboo and glass panels. But in Beijing, the budget was lower and certain materials harder to get, which steered the architects to using plywood. And amid concerns over the sourcing of wood in China, plywood was a relatively sustainable choice. "If this were in Hong Kong, we might have had a better budget and gone with fancier materials," says Lim. "But it wouldn't have turned out like this."

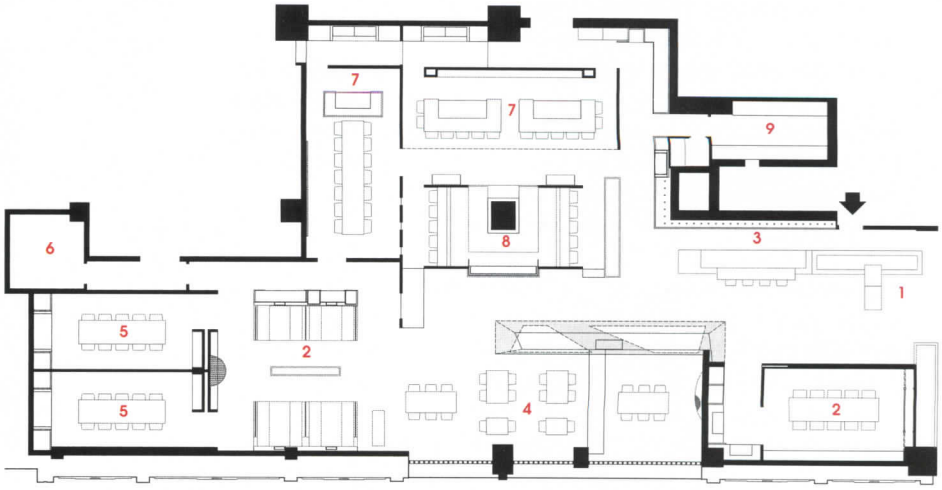
A simpler approach also seemed appropriate given the restaurant's location, not in the typical province of luxury hotels, the Central Business District, but near the city's universities. Though hotel executives required some reassuring along the way, says Lim, "eventually they saw the beauty of using raw plywood in a very finished restaurant."

For Lim, who worked in Boston for five years before returning to his native Hong Kong in 1987, Nishimura's wood-based design draws from a recurring theme in his work. A large outdoor pavilion he designed in the shape of a lantern

The architects at CL3 designed a bulbous sphere made of plywood strips and embedded it in the center of a mirrored wall (below left), separating private dining rooms from dining booths (below right).

CL3 did amazing things with plywood, creating cutouts on a wall made of 1,000 sheets of the material (above left) and using strips to screen the sushi bar (above).

1. *Reception*
2. *Tatami*
3. *Sake bar*
4. *Dining*
5. *Private dining*
6. *Chef's office*
7. *Teppanyaki*
8. *Sushi bar*
9. *Pantry*



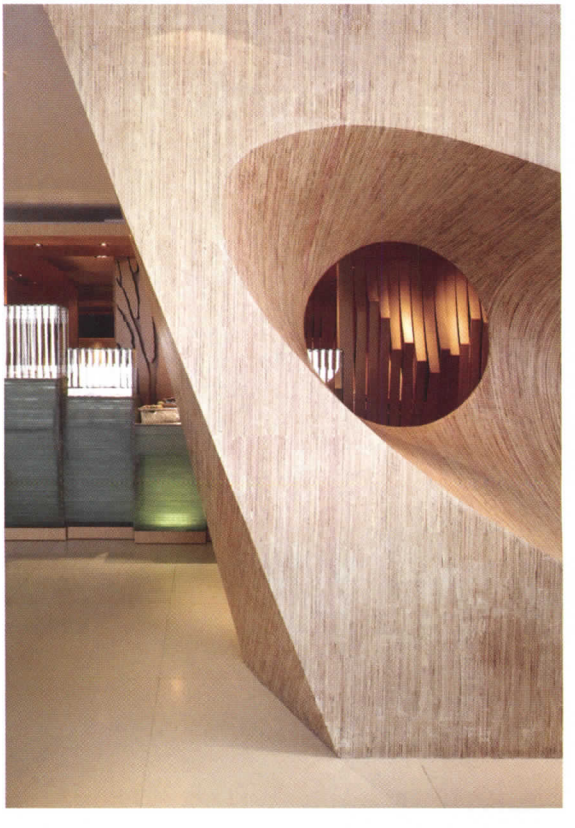
PROPOSED LAYOUT

0 10 FT.
3 M.

for Hong Kong's Mid-Autumn Festival in 2003 relied entirely on bamboo for its structure and decorative elements. For the 2006 Venice Biennale, he designed an installation made of 500 black-lacquered bamboo ladders tied together with traditional hand knots and criss-crossed with red neon tubes. The luminescent work was a starkly Modern interpretation of traditional Chinese fortresses. "I've been exploring this contemporary Asian feel for a few years, using simple materials, lighting, and textures to tell a story."

The narrative spun at Nishimura is one of natural progression, told with a few surprising flourishes. After guests weave through the hotel lobby—an opulent ode to gold and silver, glass beads, satin, and leather—CL3's direct and soothing design feels like the architectural equivalent of brilliant haiku. ■

A skylight and a floating wooden platform give the sense of a Japanese garden (above). Workmen sanded and waxed precut sheets of plywood to create sculptural cutouts (right).



Project: *Nishimura restaurant, Beijing, China*
Architect: *CL3 Architects—William Lim, Joey Wan, Jane Arnett, Rain Ho, design team*
General contractor: *CSCEC*

SOURCES
Frosted-glass downlights: *Custom by Art Creation Lighting Design*
Pendant lights over booths: *I.F. Lighting*
Pendant lights: *Matisse Limited*

ONLINE: To rate this project, go to ***architecturalrecord.com/projects/***.

Lim and his colleagues abstracted nature and Asian design principles to create spaces such as this private *teppanyaki* room that are Modern and calm.

Knife-edge ceiling planes of plaster over metal and laser-cut stainless steel help distinguish the entrance from the kitchen and dining areas.

By Suzanne Stephens

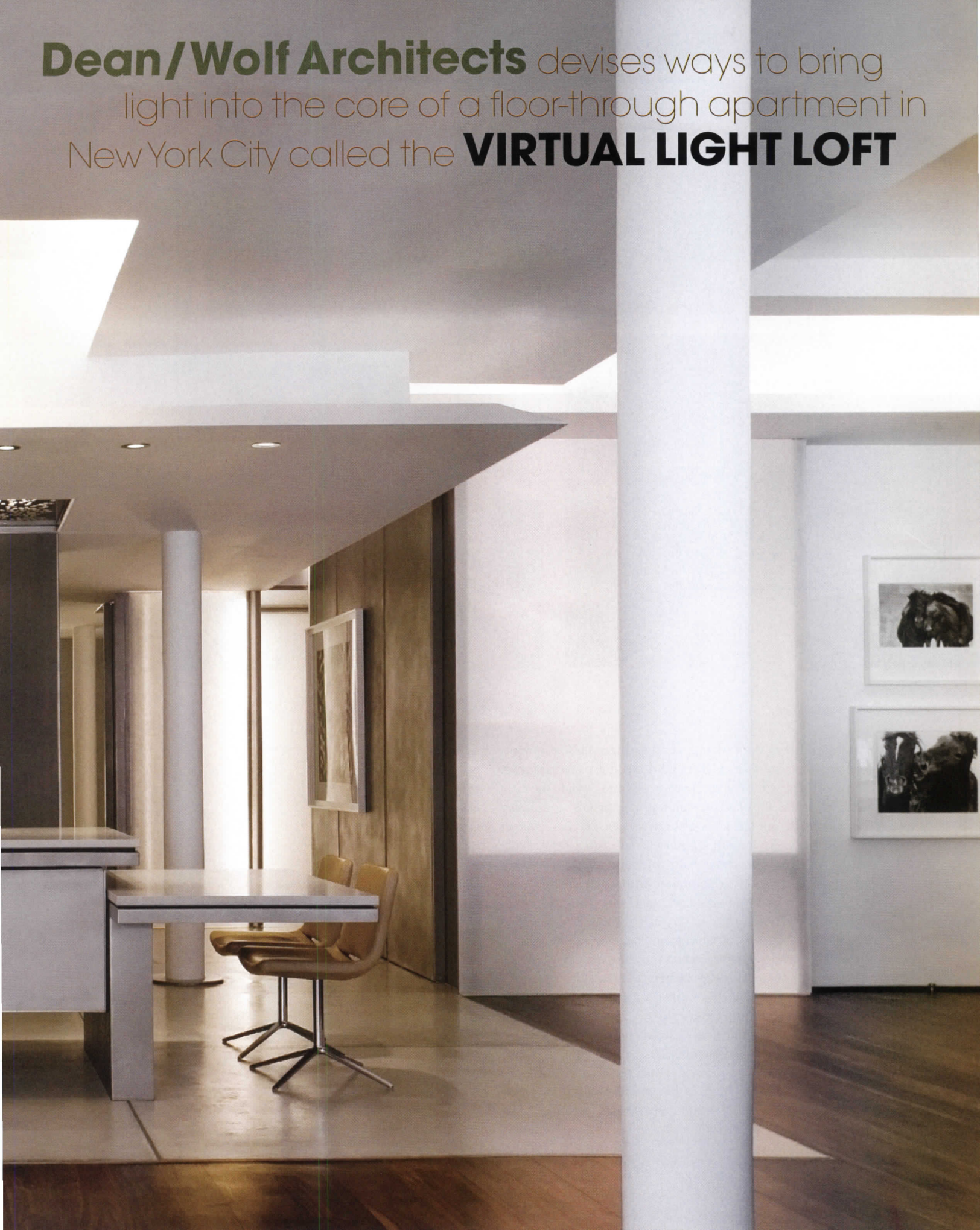
The good news was that the generously proportioned loft apartment of 3,200 square feet in New York's Tribeca district was a floor-through. On the north expanse, one sees the Empire State Building dramatically framed by two huge, arched windows; toward the south, there is a picturesque melange of rooftops. The bad news was that a ganglia of mechanical ducts and plumbing pipes clotted the central portion of the apartment, keeping daylight from filtering far into the apartment's recesses.

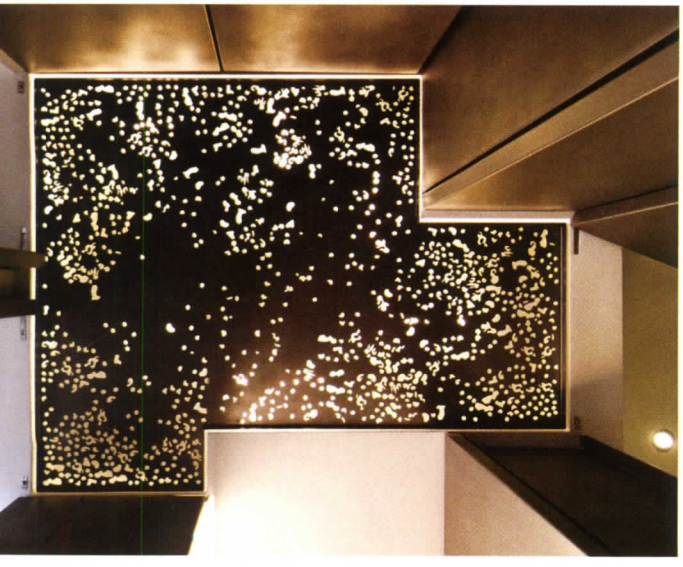
The Romanesque Revival light-industrial building, dating to 1905, was carefully but conventionally converted to residential use in 1999. In this particular apartment, the living and dining areas, separated only by a row of cast-iron columns that support the concrete barrel-vaulted ceiling, were segregated from the three bedrooms along the south wall by the dense, dark central core.

The clients encountered Dean/Wolf Architects' work on a tour of Tribeca lofts, and recognized its skill in combating New York's typically shadowy, crepuscular interiors. They soon enlisted the firm, founded in 1991 by Kathryn Dean and Charles Wolf, to bring a Modernist approach to the complex space.

The two architects differentiated the wall planes so that ver-

Dean/Wolf Architects devises ways to bring light into the core of a floor-through apartment in New York City called the **VIRTUAL LIGHT LOFT**





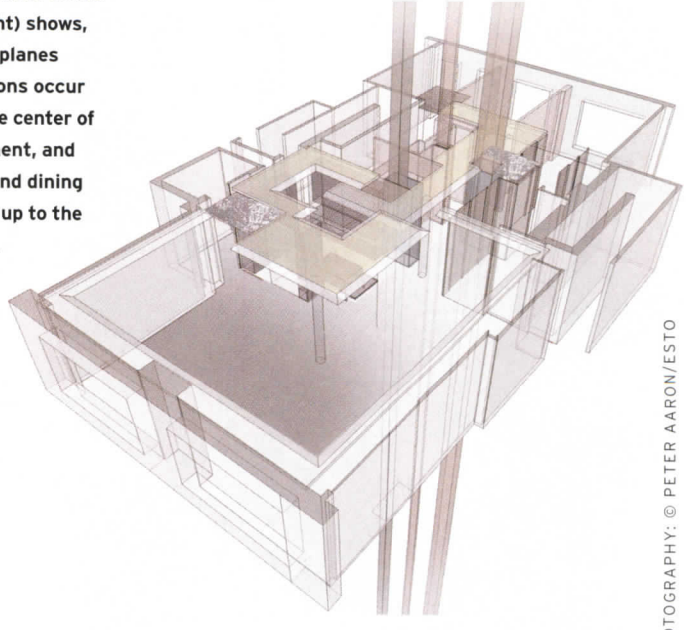
The laser-cut stainless-steel canopies over the entrance (top left) and the children's quarters (bottom left) signify different precincts. The living room's north light bounces against the stainless-steel-paneled wall (below), while cove lighting emphasizes the sculptural quality of the original barrel-vaulted concrete ceiling.

tical surfaces parallel to the east and west bearing walls are opaque, shimmering, stainless-steel panels. They fabricated the panels as folded doors to endow them with structural properties and obviate the need for wood frames. Next, they had the stainless-steel panels sandblasted by hand for a smooth, but not super-reflective sheen. Perpendicular to the existing bearing walls, smooth, translucent, laminated-resin planes conceal such elements as closets or shafts containing ducts. The laminated-resin panels vary subtly in color; one embedded with a copper and gray textile gleams with a particularly gossamery shine.

Now light bounces softly off the various surfaces or emanates ethereally from within shafts of laminated resin containing fixtures. Dean and Wolf were able to dematerialize the "supportive entrails," as they describe the mechanical and plumbing elements that cluster at either side of the central hall. "We wanted to turn these shafts into "haunting luminous presences," Dean says.

Besides the attention Dean/Wolf gave to the vertical surfaces in the loft, the firm focused on the often-neglected ceiling. Here the architects created a series of layered planes that spatially define areas of the loft and at the same time increase the opportunities for bounced and filtered light from above. The most unusual strategy was the firm's

As the exploded axonometric (right) shows, the ceiling planes and partitions occur in the dense center of the apartment, and the living and dining areas open up to the north view.



PHOTOGRAPHY: © PETER AARON/ESTO

The architects hid plumbing pipes and mechanical ducts behind smooth, shimmering planes of translucent resin and *stainless steel* (below).

The central hall (above) leads past the kitchen to the powder room and deeper into the recesses of the apartment's bedroom area. The children's bedrooms (near right) and the master bath (far right) receive definition by the dappled light filtering through the laser-cut stainless-steel ceiling panels.

1. *Entrance*
2. *Dining area*
3. *Living area*
4. *Kitchen*
5. *Master bedroom*
6. *Bedroom*

Translucent panels of slightly different hues separate the bedroom (below) from the closet and add to the feeling of calm ethereality throughout the apartment.

design of five laser-cut steel ceiling panels simulating the dappled light of a tree canopy, where openings are filled with poured resin and backlighted by fluorescent tubes. (The dimmable lights can be changed by unhinging one edge of the panel, although perhaps this is not as fast and easy as screwing in a lightbulb.) Elsewhere, Dean/Wolf suspended ceilings of knife-edge metal panels surfaced in plaster over certain areas. The floating, layered effect, punctuated by concealed light sources, gives areas such as the entrance and kitchen more intimacy of scale. In this ethereal mîse-en-scène, floor surfaces function as the backdrop: In some places, they are concrete; in others, walnut planks take over.

The clarity and concision of the whole approach applies to the living spaces, bedrooms, and baths. New York–based interior designer Vicente Wolf (no relation to Charles Wolf) provided appropriately lush, Modern furnishings for the ensemble, adhering to a muted palette of colors and punctuating the spaces with an occasional grandly scaled, framed mirror.

In the Virtual Light Loft, as it is dubbed, softly glowing, evanescent, disembodied planes now dominate the central hall. But they do more than define the various precincts. The cool, almost color-free environment heightens the sense of serenity. The interior offers a refuge from the noisy, gritty 21st-century city by virtue of its own *luxe, calme, et volupté*, to borrow the words of Baudelaire, writing during the frenzied growth of Paris in the 19th century, to describe a utopian place of ease, order, and sensual delight. This particular sense of luxury, calm, and pleasure has been present in much of Dean/Wolf's residential work [RECORD, January 2004, page164; September 2002, page 147], but here the sophistication of the technically manipulated materials and various forms of illumination adds yet another dimension. ■

Project: *Virtual Light Loft, New York City*
Architect: *Dean/Wolf Architects—Kathryn Dean, Charles Wolf, partners in charge; Jenny Shoukimas, Gabriel Bach, ceiling pattern*
Interior designer: *Vicente Wolf*
Lighting: *Coonley Monato*
Acoustical: *Audio by James*
General contractor: *VCD Construction*

SOURCES
Resin panel embedded with textiles: *3Form*
Laminated acrylic resin panels: *LightBlocks*
Paints: *Benjamin Moore*

ONLINE: To rate this project, go to ***architecturalrecord.com/***projects/.

By Naomi R. Pollock, AIA

In 1993, when the hip-hop-inspired hoodies, sneakers, and T-shirts of A Bathing Ape (aka BAPE) first began appearing on the back streets of Tokyo's edgy Urahara neighborhood, their designer never dreamed his clothes would be sold next door to The Gap, Uniqlo, and other mass-market retailers. But more than a decade and 40-plus BAPE outlets later, including stores in Hong Kong and New York City, the DJ-turned-fashionista known as "Nigo" decided it was time to take on Shibuya. Yet the move into this trendy but mainstream Tokyo shopping and entertainment district posed a conflict: While the central location offered increased exposure, it also threatened the brand's exclusive aura. Fortunately, Nigo's longtime interior design collaborator, Masamichi Katayama, of the Tokyo firm Wonderwall, had the solution.

"Because BAPE is already an established brand with a loyal following, we thought we could do something extreme," says Katayama. The Shibuya store, opened in late 2007, departs from the stark white and spaceshiplike BAPE boutiques that came before. Although the shop meets the street with a poker-faced wall devoid of identification aside from the brand's simian mascot mouthing the words "Go Ape," a dazzling light show visible through the glass doors pulls shoppers inside.

Like a giant Tetris game, a grid of flashing LED fixtures lines the walls and floor of the 26-foot-wide entrance. The glazed squares switch colors in time to a pulsating beat, while limited-edition sneakers roll by on a conveyor belt beneath a swath of clear glass in the middle of the foyer floor. A mirrored stainless-steel ceiling tops off the whole shebang, producing enough sensory overload to rival the game center that once occupied the store's 4,200-square-foot space at the base of architect Atsushi Kitagawara's Rise Building (1986). Though not a treatise on energy conservation or sustainability, Katayama's scheme clearly distinguishes the BAPE shop from the conventional, casual-wear stores nearby.

Beyond the threshold, the shopping floor unfolds a few steps below. Organized by a grid of internal "streets," two glass-enclosed boxes

Naomi R. Pollock is RECORD's Tokyo-based special international correspondent.

From the street (left), BAPE customers catch a glimpse of the dazzling grid of colorful flashing LED fixtures just inside the entrance (right). The shopping floor is organized by interior "streets" (bottom left), with two glass-enclosed boxes at its core.

PHOTOGRAPHY: © KOZO TAKAYAMA

With movement, light, and sound, **Wonderwall** creates a sensory shopping environment for **A BATHING APE** in Tokyo's Shibuya district

dominate its core. These 13-by-17-foot rooms-within-a-room house the bulk of the menswear collection. Separated by walls of hanging racks and built-in shelves, back "alleys" contain women's wear and service counters. Mirrored doors and partitions conceal the dressing rooms.

The shiny and reflective surfaces carry over into the boutique's main body, where marble covers the floor, and silver and pink aluminum wall panels define the men's and women's areas, respectively. Other finishes incorporate graphics from the brand's distinctive clothing, such as the signature camouflage pattern affixed to the glass boxes. Some motifs, like the plaid that covers ceiling panels and wall recesses, were created specifically for the project by BAPE's graphic designers. The tartan pattern also adorns the boutique's shopping bags.

Katayama regards lighting as a nontactile "material," using it like trim or buttons, to underscore the shop's rectilinear geometry. Strip fixtures and downlights are concealed behind ceiling panels, below the floor, and inside recessed cans. The lighting blends seamlessly with the architecture, except inside the two glass boxes. Each of these spaces is crowned with a large, acrylic circle flush with the ceiling, lit from above, and adorned with an "R," as if trademarking the entire collection.

Though pirating is no joke for Nigo, Katayama aped his own designs in Shibuya. "It is a kind of compilation of previous works," explains the interior designer. The LED grid is an adaptation of the illuminated stair in an earlier BAPE outpost, and the conveyor belt mimics a moving display devised for the brand's now defunct sneaker specialty store. Katayama also borrowed the concept for the showcases for bling and baseball caps from the BAPE boutique in Tokyo's Aoyama neighborhood, where he modeled store fixtures after deli-style refrigerator cases. "I don't only design shops, but ways to sell merchandise," he says.

With shoes that move, lights that flash, and displays straight out of a 7-Eleven, the Shibuya store is attracting crowds that rival those at the city's hottest clubs. Yet all the traffic is bound to take its toll. "There are so many shoppers that stores simply wear out," says Katayama, adding that the boutique could require an overhaul in as little five years. But in the meantime, the spectacle, as much as the shopping, is some of the best entertainment in town. ■

As if trademarking the entire collection, a circular light fixture, flush with the ceiling and adorned with an "R," crowns each glass-enclosed box (far left top and bottom). Katayama modeled showcases for bling and baseball caps after deli-style refrigerator cases (left).

Project: *Bape Shibuya, Tokyo*
Designer: *Wonderwall—Masamichi Katayama, founder*
Lighting consultant: *Plus y*
General contractor: *D. Brain*

SOURCES
Glazing: *Nippon Sheet Glass*
Locksets: *Miwa Lock*
Camouflage film: *Sumitomo 3M*
Marble floor: *Advan*

ONLINE: To rate this project, go to **architecturalrecord.com/projects/**.

Some of the finishes incorporate motifs from the brand's clothing, such as the camouflage pattern on the glass boxes. The plaid that covers ceiling panels and wall recesses was created by BAPE graphic designers specifically for the project.

Stainless-steel rods *abutting the glass* wall of the library support its glass shelving (at left in photo). The archives have slender, poured-acryl vertical bookcases (at right).

BAR crafts a crystalline "city of boxes" for the new home of the BNA/ROYAL INSTITUTE OF DUTCH ARCHITECTS in Amsterdam

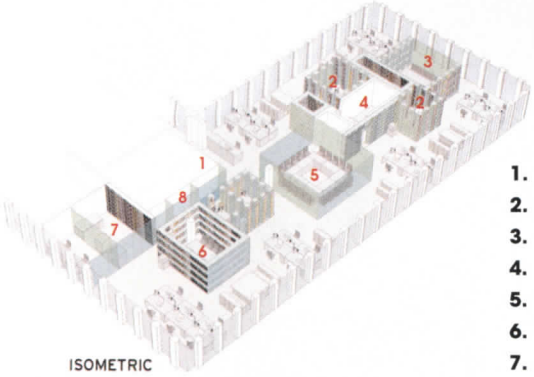
By Tracy Metz

Rarely will architects be as intensely aware of their client's involvement as when they are designing for fellow architects. So when the Royal Institute of Dutch Architects (Bond van Nederlandse Architecten [BNA]) selected the young Rotterdam-based firm of BAR Architects (now merged with architecten Van Mourik) from a field of eight competitors to design the interior of its new offices, BAR's principals Joost Glissenaar and Klaas van der Molen were very conscious of the weight of the commission. They formulated a light and airy response.

"They liked us because our work is contemporary without being too hip or too ornamental," says Glissenaar. In early projects, such as a hostel for aging junkies [RECORD, Design Vanguard, December 2006, page 89], they displayed a talent for wrapping a social agenda in confident forms. Also in 2006, BAR won the prize for young talent awarded

Tracy Metz is RECORD's Amsterdam-based international correspondent.

Meetings can be held within the glass-shelved walls of the library (right). Looking out from the library (bottom), the floor-to-ceiling acryl archive shelves in the adjacent work cell can be seen on the left, and the glass-walled meeting room is visible beyond.



ISOMETRIC

1. *Entrance*
2. *Work cell/archives*
3. *Lunchroom*
4. *Emergency stair*
5. *Meeting room*
6. *Library*
7. *Repro room*
8. *Wardrobe*

This general work area includes storage lockers (at right), a work cell lined with shelves for archives (center), and workers' desks along the window wall overlooking the river (at far left).

PHOTOGRAPHY: © ROB 'T HART FOTOGRAFIE

by the Netherlands Architecture Institute and the developer AM.

The BNA was housed for many years in a patrician canal house in the 17th-century city center. When Marie Hélène Cornips was appointed director in 2004, she decided to move the association to a more contemporary venue, an office building by Kees Christiaanse and Partners (KCAP) on the recently redeveloped banks of the IJ River.

Hiring a young firm was part of the BNA's own strategy of rejuvenation. As new director, Cornips wanted the interior to express the organization's move toward a new transparency and public engagement. That meant an open floor plan to facilitate communication and an anticlutter "clean desk" policy. Every worker now has a locker and a set of drawers on wheels in which to put everything away at the end of the day. Director Cornips is nothing if not consistent, so not even she has a room of her own. According to Glissenaar, "That was quite a change for the employees, who were used to working in a private space of their own. It was not an easy sell."

But the open floor plan was accepted more easily than expected. Glissenaar is convinced that this is in large part due to the ceiling. Instead of the standard lowered panel ceiling, the architects created an acoustic ceiling of expanded metal with insulation directly behind it, reducing ambient noise—a drawback of an open plan.

Openness, however, still needs structure. The architects decided to translate the organizational structure into "a city of glass boxes," giving each function in the organization—the meeting room, the library, the lunch area, the repro space, the work cells—a box, and thereby an identity, of its own. The boxes are grouped together along the spine of the rectangular floor plate, freeing up the edges for the workers' desks and keeping the spectacular views open. In particular, those who work along the river enjoy watching boats pass by and cruise ships dock at the nearby Passenger Terminal through the building's generous floor-to-ceiling windows (shielded by operable shades to temper the daylight).

A bronze bust of Gerrit Rietveld sits between a work cell lined with archive shelves, on the left, and the glass meeting room (top). The work cell/archives have floor-to-ceiling windows (right). The bust in the former offices of BNA (right).

With transparency being such an important goal for the organization, glass was the obvious material. "Glass is not associated with any particular style," says Glissenaar. "This had to be about the work of the BNA, not a fashion statement. This interior is literally colorless: It is the people who color it in with their clothes and their books."

Each box in the BNA "city" has its own subtle, customized design, with varying horizontal and vertical matte and transparent stripes. Not all that is transparent is glass in this city, however. Some of the shelves and bookcases are made of poured acryl with the greenish cast of matte glass, custom fabricated in Poland. It has the advantages, says Glissenaar, of being both lighter than glass and able to be drilled. In addition to the glass boxes, there are purpose-built objects—combined bench, table, and storage space covered with a thin layer of rubber—meant to be used as temporary meeting and working spaces.

An ingenious element in this understated environment is the expandable meeting room. One of its four sides, that facing the river, can fold out along rails to accommodate large gatherings. But the most spectacular space is the library, a glass box with matte and transparent horizontal bands. The shelves, also glass, hang on steel cables from the ceiling and rest on stainless-steel rods, keeping the floor entirely free.

With its new headquarters like a city of boxes, the BNA presents a fresh face to the world. There is only one old face in its new home: a bust of Gerrit Rietveld that used to grace the house on the canal. ■

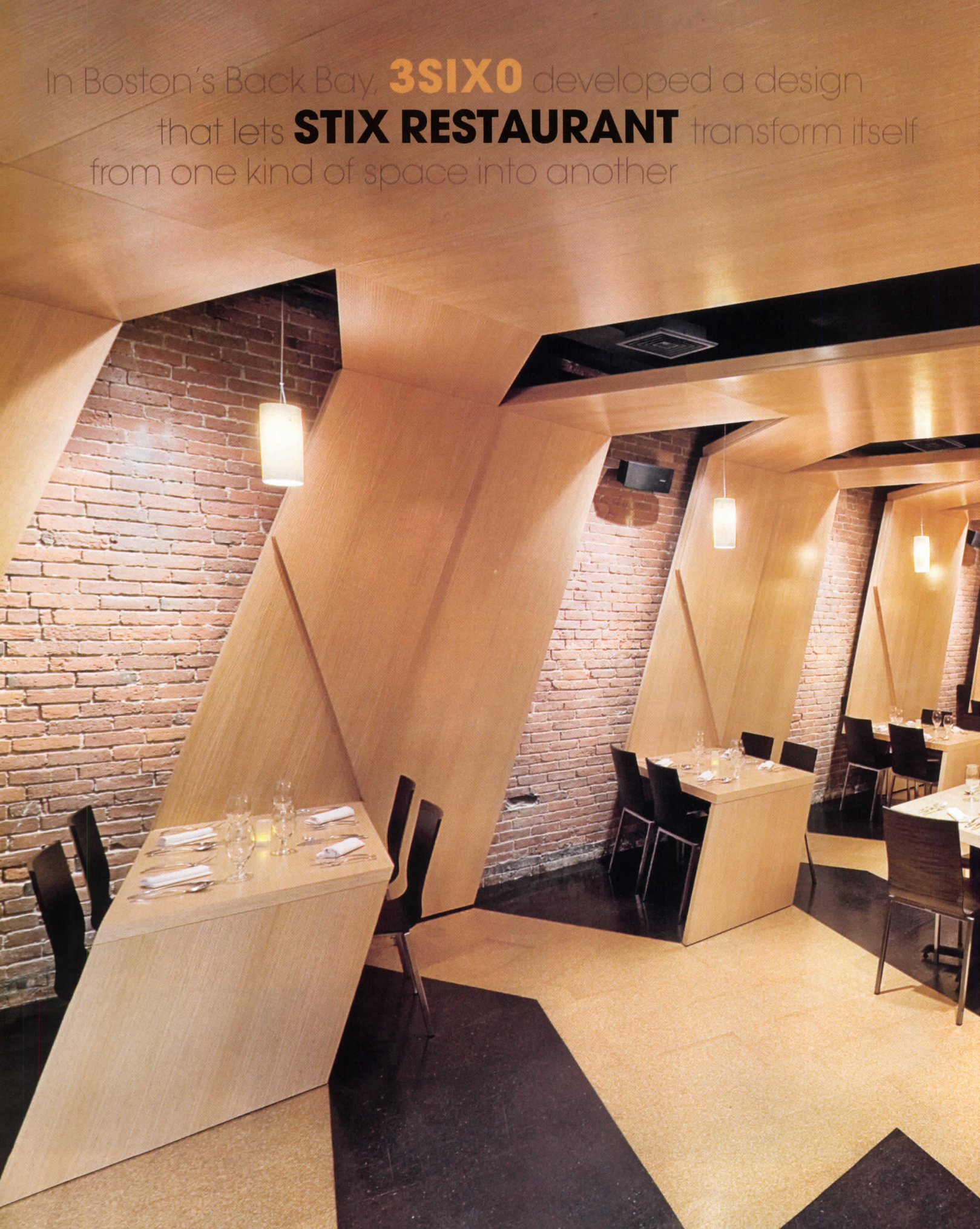
Project: *BNA (Bond van Nederlandse Architecten), Amsterdam*
Architect: *BAR/architecten Van Mourik—Joost Glissenaar, Klaas van der Molen, Hoang Phong Lan, Anja Traffas*

SOURCES
Acryl bookcases: *Talboom*
Glass walls, library: *Marc van Bokhoven Glas*
Work tables, chairs: *Vitra*
Steel ceiling: *Lindner*

ONLINE: To rate this project, go to **architecturalrecord.com/projects/.**

The door to the library, shown slightly ajar (right of center), has been outfitted with glass shelving in order to maintain a continuous, seamless run throughout the interior of the library.

In Boston's Back Bay, **3SIX0** developed a design that lets **STIX RESTAURANT** transform itself from one kind of space into another



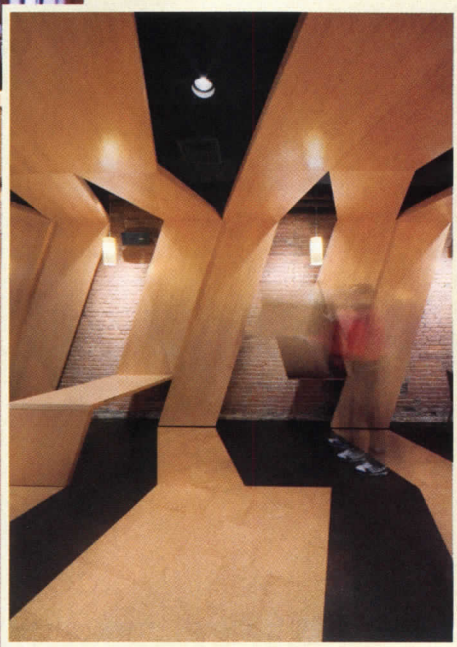
By Clifford A. Pearson

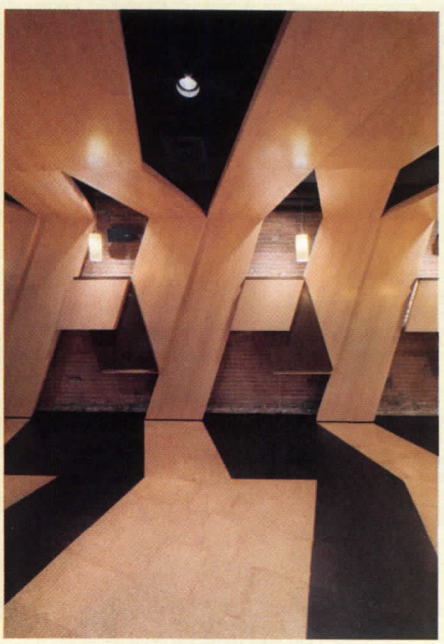
Chris Bardt and Kyna Leski describe their work process as "material reasoning," a hands-on way of designing by doing. Bardt and Leski, partners in the Providence firm 3SIX0, both teach at the Rhode Island School of Design (RISD) and explore ideas by making models—wire frame, paper, cardboard, wood, you name it—and mock-ups at various scales. Deeply involved with one of the only architecture programs in the U.S. set within an art and design school, rather than an academic or research institution, Bardt and Leski bring a strong materials sensibility to projects such as Stix, a 1,500-square-foot restaurant and club in the Back Bay area of Boston.

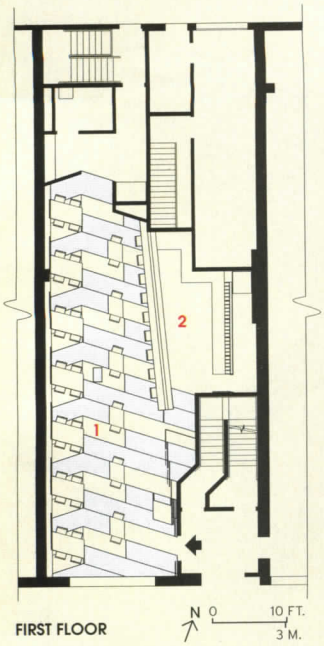
The concept behind Stix was to serve food on skewers ("sticks") in a casual setting where guests might strike up conversations with strangers sitting nearby. The business model envisioned renting out the restaurant for private and corporate functions during which most guests would eat and drink standing up. In other words, the place had to work for both sit-down dining and cocktail parties—a tough design challenge for the architects.

In 2002, Bardt and Leski designed the restaurant 33 [RECORD, December 2002, page 118], which sits next door to Stix and has the same owners—Greg Den Herder and Igor Blatnik. While 33 has been a big success, the architects now feel they packed too many design ideas into one place. For Stix, they decided to develop one strong concept and keep everything else simple. At first, they explored the idea of creating a bar featuring a series of fingerlike extensions where customers could sit and talk to people at adjacent projections. They rejected this scheme, though, because it used too much space and didn't provide enough flexibility. Eventually, they developed the idea of a continuous "coil" wrapping around the floor, ceiling, and one wall—an element that would hold every-

Dining tables can fold up and dock on the wall, allowing the restaurant to accommodate sit-down dining (left) one moment and cocktail parties the next (below left and right).

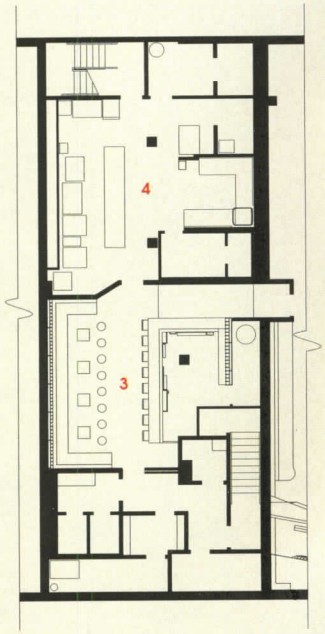






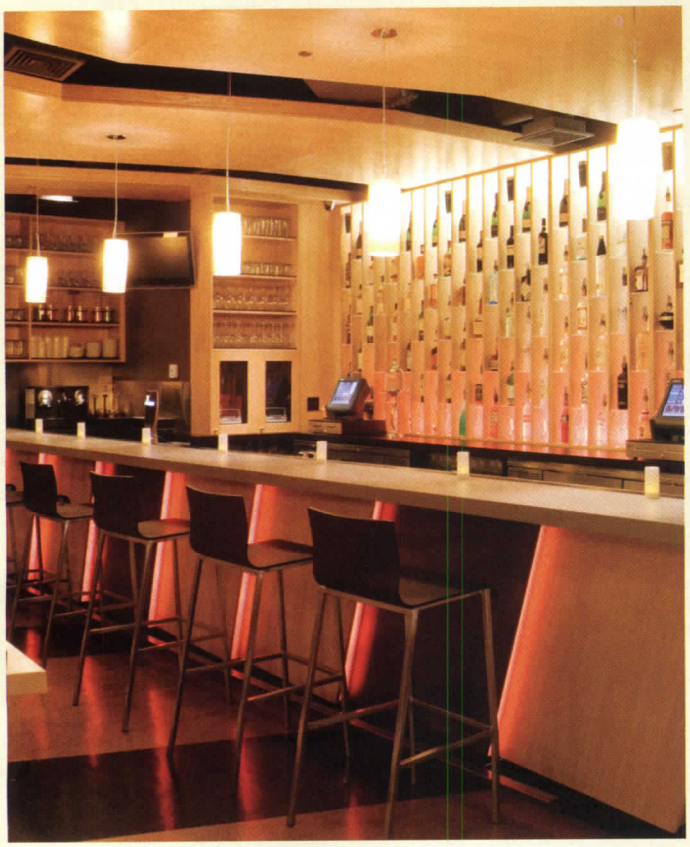
FIRST FLOOR

1. *Dining*
2. *Bar*
3. *Lounge*
4. *Kitchen*



BASEMENT

The oak tables and cork floor work as parts of a continuous "coil" tying the space together (left). The bar combines a light-emitting concrete countertop with LEDs (below).



PHOTOGRAPHY: © JOHN HORNER

thing together visually and programmatically. However, instead of curving around the 1,100-square-foot main space on the first floor, this coil would zig and zag as a sequence of straight-edged parallelograms made of rift-sawn oak. More than just a cool graphic device, this element would house dining tables that could be folded up and docked on the wall, freeing up floor space when the restaurant switched to cocktail-party mode.

3SIX0 based the restaurant's geometry on parallelograms, says Bardt, because they use space most efficiently. "It's the same idea as parallel parking," explains Leski. "You can park more cars when they're set at an angle." Originally, the architects wanted to make the tables fit flush when upright, creating a uniform, flat wall surface. But then they discovered the existing brick wall projects out at one point several inches, which made the flush-wall scheme a lot more expensive to build. So they floated the oak coil and its fold-up tables about 10 inches off the wall and let the existing red brick serve as a contrasting backdrop to the newly inserted wood surfaces. And if diners look carefully, they can see how all the pieces fit together, something that would have been more difficult to understand if everything were flush.

To figure out the geometries and make them work, the 3SIX0 team made a lot of physical models, starting with paper ones, then working up to stiffer materials, and eventually full-scale mock-ups. "I don't think we would have come up with this solution if we used only the computer," says Leski. "Folding paper lets you see things you never could on a computer screen." In the end, they designed tables made of two parallelograms—a dining surface measuring 30 by 48 inches and a vertical support that is 30 by 30 inches. Standard steel hinges connect the dining surface to the wall and the base to the dining surface. To save time and better control the quality of construction, they fabricated the tables and the rest of the oak coil off-site, then assembled everything in the restaurant.

Along the wall opposite the fold-up tables, the architects designed a simple, angled bar, accented with LEDs and a terrazzolike countertop made of light-transmitting concrete. Downstairs, they sketched a straightforward lounge, but didn't have much of a budget to work with. A combination of downlights set into the ceiling and suspended pendants provide most of the illumination in the main dining area. Because the owners didn't want the hassle of maintaining a wood floor, 3SIX0 specified cork floor tiles in black and tan.

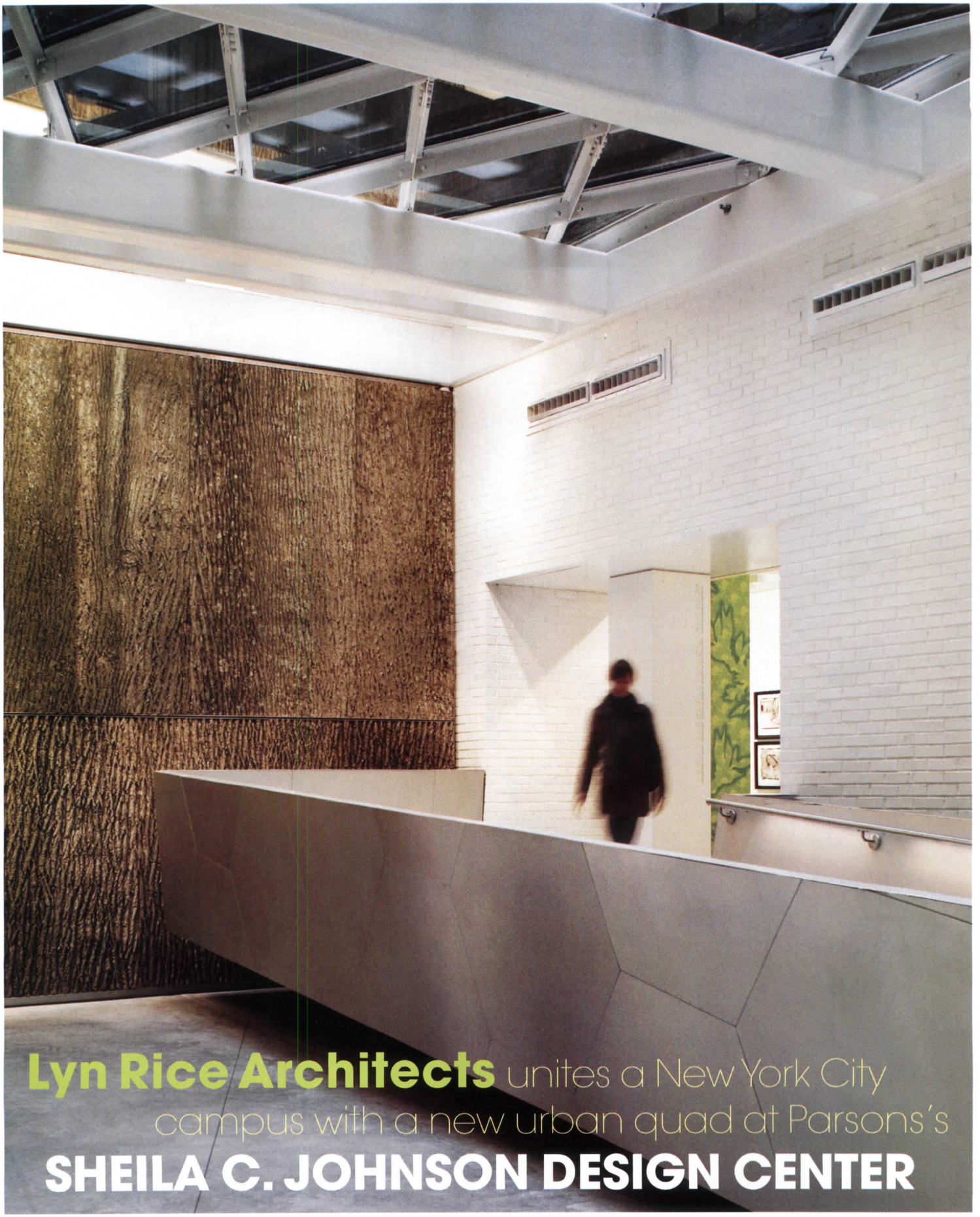
While they were working on Stix, Bardt and Leski were also designing a new chapel for the Shepherd of the Valley Church in Hope, Rhode Island, which is now nearing completion. On both projects, they used a wood coil as a way of tying an interior together and creating architectural tension. In the chapel, though, the coil gets tighter as it moves closer to the altar, while at the restaurant, the spacing between the oak parallelograms remains constant. Although the two projects spring from a shared idea and approach to materials, they show how the partners at 3SIX0 can find different expressions—one for the sacred, one for the profane. ■

Project: *Stix restaurant, Boston*
Architect: *3SIX0 Architecture & Design—Kyna Leski, Chris Bardt, AIA, Aaron Brode, Eleanor Lee, Jack Ryan, Charlie Thornton, design team*
General contractor: *Cafco Construction Management*

SOURCES
Acoustical ceiling: *Armstrong*
Custom woodwork: *Butler Architectural Woodwork*
Cork flooring: *Expanko*
Bar counter: *Sensitile Systems*
LED lights: *Colorkinetics*

ONLINE: To rate this project, go to ***architecturalrecord.com/projects/***.

The diamond pattern of the quad's glazed roof is half the size of that in the space's poured-concrete floor. Beams correspond to the column grid of the north and south buildings.



Lyn Rice Architects unites a New York City campus with a new urban quad at Parsons's

SHEILA C. JOHNSON DESIGN CENTER

PHOTOGRAPHY: © MICHAEL MORAN, UNLESS OTHERWISE NOTED

Utilities wrap a service elevator next to the new 13th Street entrance. Large canted windows with broad sills provide seating and views in from the street to student work (below left). A wall pivots out to create an informal classroom (below right).

By Beth Broome

Parsons The New School for Design, housed since the 1970s in a cluster of four early-20th-century buildings on the corner of Fifth Avenue and 13th Street in Manhattan, had long been suffering from a kind of cognitive dissonance.

The physical space occupied by the school—which offers 22 programs, ranging from architecture to fashion design—did not align with the ideals embodied in the institution's teaching. The best thing that could be said about Parsons's street-level public and circulation areas (that serve the classroom floors above) was that they "had character." A cramped warren of segregated spaces connected by back alleys and service areas, the school was, mildly put, difficult to navigate. And with its compressed lobby areas, students often could be seen lining up for class out on the sidewalk. The school "did not display or speak to the work that was going on inside," says Lia Gartner, New School vice president for design, construction, and facilities management. Nor was it effectively connecting with the city, a rich resource that Parsons values as an extension of the classroom.

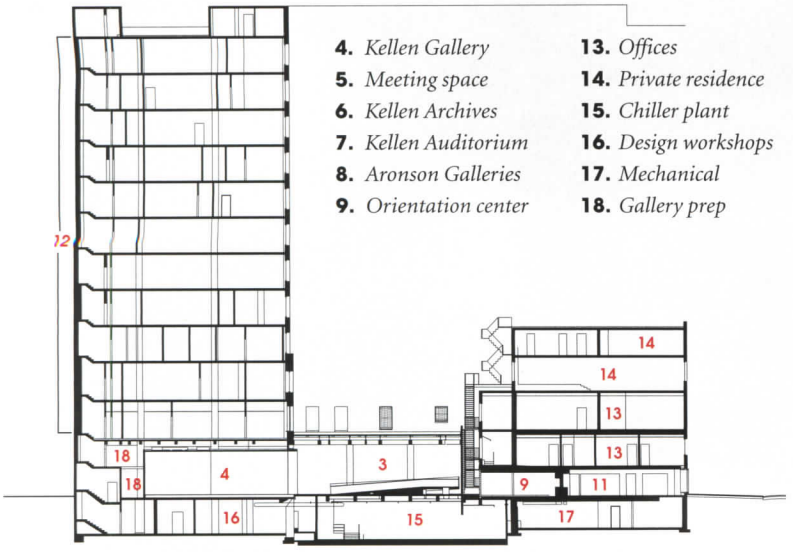
Prompted in part by funding from Sheila C. Johnson (a philanthropist, chair of the Parsons board of governors, and trustee of the New School), in 2003 the school invited a select group of architects to reimagine the ground level joining the mid-rise buildings. The goal was to improve circulation, create a nexus for bringing together students and faculty from different disciplines, and connect the school with the city while demonstrating the importance of design and communicating the school's identity.

"The idea of reconnecting to the city drove the project," says Lyn Rice, AIA, principal of New York–based Lyn Rice Architects (LRA), who collaborated with his associate Astrid Lipka, AIA, on the 32,800-square-foot job. But before any of the loftier goals could be achieved, the messy deed of uniting the various buildings had to be tackled. "It was like a veterinarian operating on four distinctly different animals simultaneously— without anesthesia," says Rice, referring to the complications of uniting the four structures: the mishmash of building modifications made over the years, the preponderance of nonaligning levels from floor to floor and nonaligning structures from building to building, and the accumulation of partitions and layers of finishes.

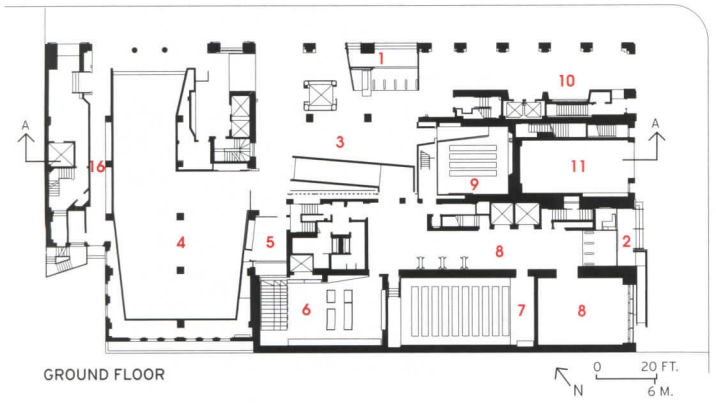
To introduce a geographic center and crossroad of circulation, the architects carved an "urban quad" out of the complex's core. To do this they removed a one-story maintenance shop in the middle of the site, excavated down to install a new chiller plant, and topped the new common space with a 1,600-square-foot glazed canopy that filters light in and provides views of archetypal "back-of-house" New York City: chimneys, fire escapes, and water towers. Utilities (some of

A graphic canopy carries the interior scheme outside (top). The Kellen Gallery opens to the street.

1. *13th Street entrance*
2. *5th Avenue entrance*
3. *Skylight Quad*
4. *Kellen Gallery*
5. *Meeting space*
6. *Kellen Archives*
7. *Kellen Auditorium*
8. *Aronson Galleries*
9. *Orientation center*
10. *Student critique area*
11. *Future design store*
12. *Design studios/offices*
13. *Offices*
14. *Private residence*
15. *Chiller plant*
16. *Design workshops*
17. *Mechanical*
18. *Gallery prep*



SECTION A-A



GROUND FLOOR

A bamboo-lined orientation center (above) occupies the complex's only wood-framed building. Student-designed wallpaper covers the main elevator bank (below). The Kellen Gallery looks out to the quad and into an elevated meeting pod (bottom).

which had previously lined or occupied interior walls) now wrap the quad's service elevator, and an aluminum ramp cocked on an angle creates a focal point and leads to passenger elevators, gallery spaces, the archive, and the auditorium.

Rather than defining the school's identity for them, the architects (who, through OpenOffice Arts + Architecture Collaborative, worked together on Dia:Beacon) helped the students create it themselves by putting their work on public display. Along the Sheila C. Johnson Design Center's perimeter, the architects lowered the sills, inserting deep-set, aluminum-encased, steel-framed windows canted outward to open up the facade and expand views both out to the sidewalk and in to the student work displayed in an exhibition area (among other places) that doubles as a classroom for pin-ups and critiques.

After unifying the complex's discrete spaces by exposing the buildings' concrete- and masonry-encased steel structures, Rice and Lipka added new architectural components as clear insertions, injecting color and texture into the raw shell. Though many of the program elements were preexisting, LRA reinvented each—completely gutting existing spaces and invigorating them with their own distinct material palette. For example, the architects lined the walls of the center's archive with gray felt to modulate acoustics and, to lighten the mood, installed a vibrantly colored central desk and lockers. In the auditorium, a bamboo

PHOTOGRAPHY: © RICHARD BARNES (MIDDLE)

A powder-coated aluminum-clad meeting pod cantilevers out into the quad.

The back wall of the Kellen Auditorium, made of CNC-milled medium-density fiberboard, functions as a sound-absorptive surface. The Kellen Archives (below) are illuminated with UV-protected fluorescent fixtures.

box inserted into an exposed brick structure, the architects added a sound-projecting front wall of slate (the back wall absorbs sound), which doubles as a chalkboard. Near the new 13th Street entrance, an elevated meeting pod, surfaced in chartreuse powder-coated aluminum, cantilevers out over the quad, and an orientation room boasts an exterior wall clad in yellow poplar bark. "It was as if we were working on several projects at once," says Lipka, "unfortunately, all with the same deadline."

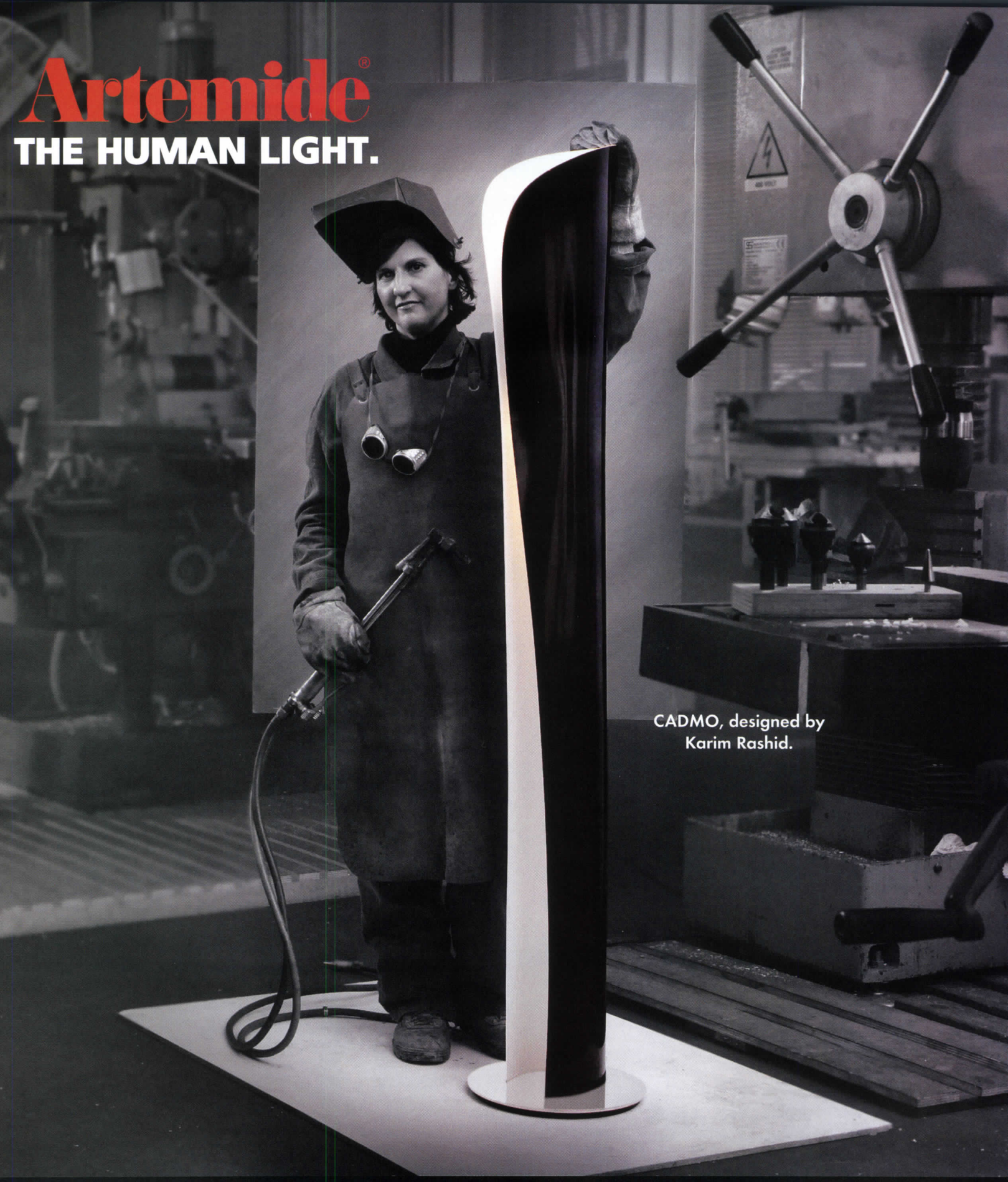
Parsons's radical makeover brings the life of the school down to street level and will no doubt have profound effects on what happens on the school's upper floors. And while the complex already provides a venue for a range of activities, from quiet study to critiques to parties, it will be interesting to see how, in the hands of design-oriented occupants, new and unexpected uses of the space will emerge in the future. ■

Project: *Sheila C. Johnson Design Center, New York City*
Architect: *Lyn Rice Architects—Lyn Rice, AIA, principal; Astrid Lipka, AIA, associate*
Engineer: *Buro Happold*

SOURCES
Custom millwork: *Legere Group*
Flooring: *Ecosurfaces; Lonseal; AlumaFloor*
Paneling: *Highland Craftsman; Teragren; Great Lakes MDF*

ONLINE: To rate this project, go to *architecturalrecord.com/projects/*.

PHOTOGRAPHY: © NOAH SHELDON (TOP)



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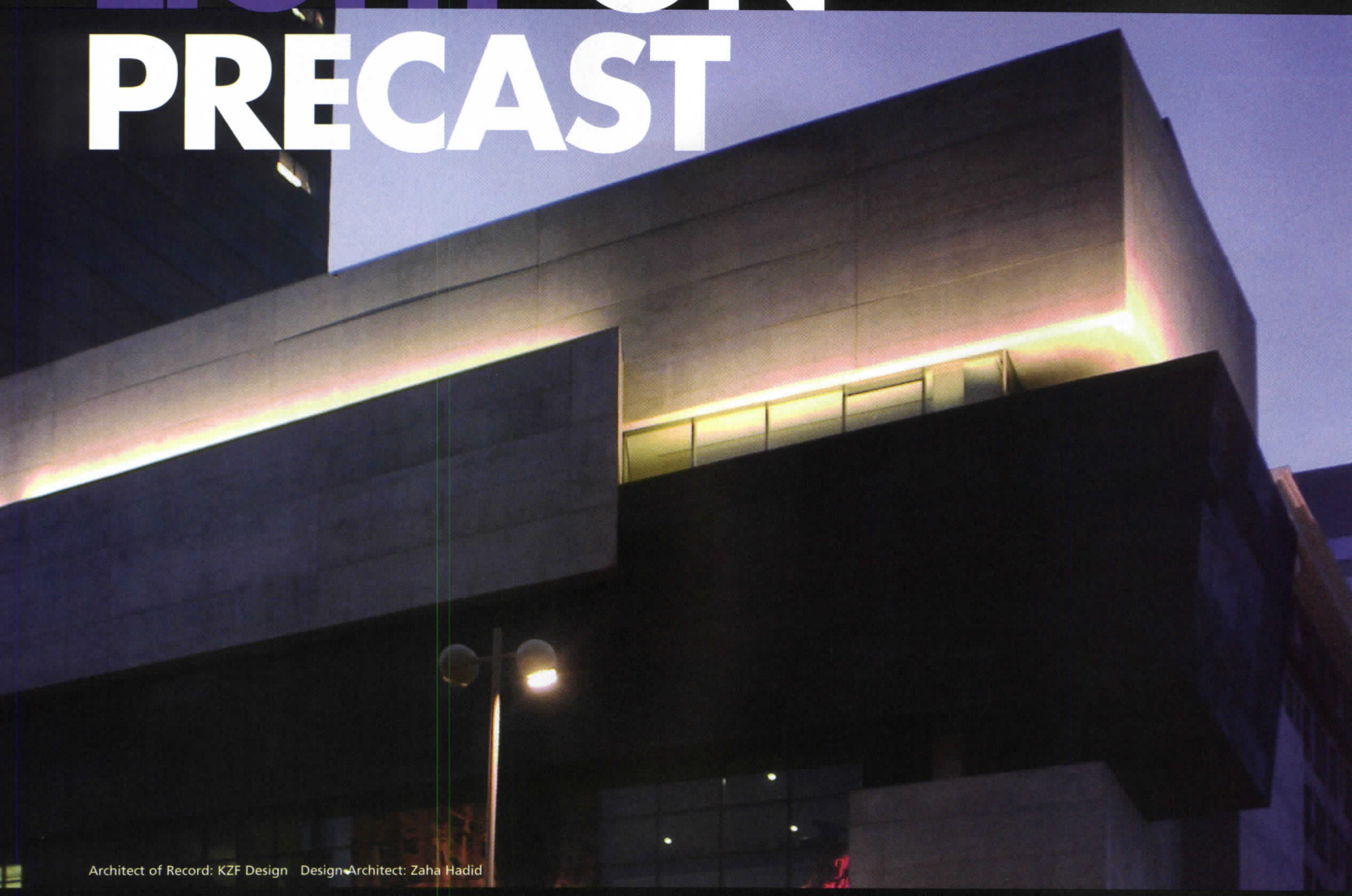
LIGHT ON PRECAST



Architect of Record: KZF Design Design Architect: Zaha Hadid

The spotlight is on precast concrete when cutting-edge design meets innovative technology in the award-winning Rosenthal Center for Contemporary Arts in Cincinnati, Ohio. Architects chose High to execute the expressive, sculptural facade because they knew High precast concrete would be most effective in enhancing the dramatic play of light and shadow while providing superior strength with timeless appearance and durability. Using a blend of aggregates and a combination of innovative, high-range, water- reducing, and viscosity-modifying admixtures, structural needs were met and the building is stunning. High's unparalleled commitment to new technology and innovation has led to solutions like this and advancements including carbon fiber C-GRID® reinforced CarbonCast®—precast that's stronger, lighter, better insulating, and more durable, allowing a virtually unlimited selection of colors, textures, and finishes. And High's exclusive 15' and 16'-wide MEGA-Tee deck systems enable wider spans and more open plans with shallower tees in precast-framed buildings and parking garages. With expert technical assistance in all phases of a project, from design to erection, High gives architects and engineers the flexibility to explore unique solutions while ensuring a job is completed on schedule and on budget. Call High Concrete to shine a light on precast.

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CIRCLE 60

Photos: 1. National Civil War Museum, QuarryCast® columns & GRG radial trim, Hayes Large Architects 2. Koi Restaurant, GRG fishnet screen, ICrave Designs 3. Wynn Spa, QuarryCast® walls, Wynn Design & Developme

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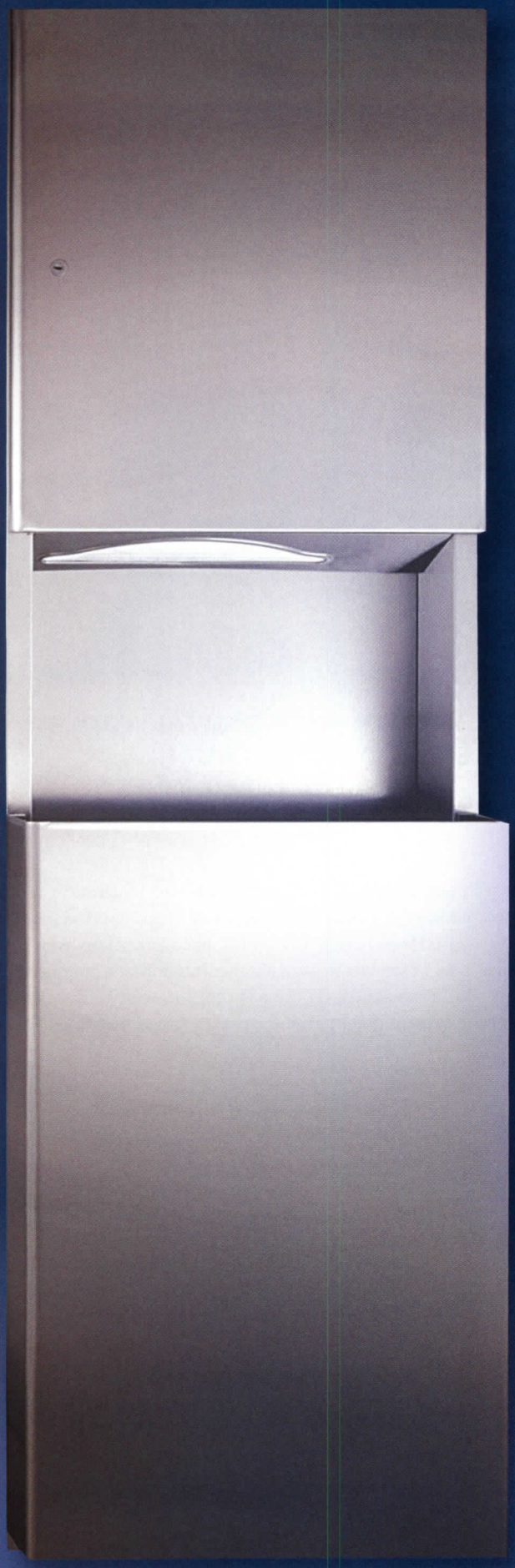

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CIRCLE 62

Some Assembly Required

FIVE FIRMS EXPLORE THE POTENTIAL OF PREFABRICATION WITH DIGITAL TOOLS, A DIVERSITY OF MATERIALS, AND VARYING DEGREES OF ON-SITE LABOR

By Joann Gonchar, AIA

Like a strange, transplanted suburban subdivision, five single-family houses have sprouted on a 17,000-square-foot empty lot in Midtown Manhattan. The homes, which include a tiny cube intended for short stays, an elegant spruce box assembled like a piece of Ikea furniture, and a four-story structure wrapped in transparent plastic, are part of the exhibition *Home Delivery: Fabricating the Modern Dwelling* at the Museum of Modern Art (MoMA) through October 20.

The installation on MoMA's lot includes (from left to right) a prototype for New Orleans, a single-occupant cube, a box assembled like flat-packed furniture, and an open and elevated house supported by a cage of plywood ribs.

Inside the museum, just next door to the lot, is a crash course in the history of prefabrication in domestic architecture. With drawings, models, film clips, full-scale reconstructions, and other artifacts, *Home Delivery* traces prefab's early roots with objects such as the portable cottage that London carpenter H. Manning designed for British colonists settling in Australia (1833) and Thomas Edison's Single Pour Concrete House system (1906). The exhibition follows developments in Europe and America in the 1920s and '30s, with work from architects including Buckminster Fuller, Walter Gropius, and Le Corbusier. It explores the post–World War II years, when burgeoning demand for housing prompted mass-produced solutions such as the Lustron Corporation's steel-framed and enamel-panel-clad houses, and continues into the 1960s and '70s with the work of the Metabolists, both fanciful and realized. The exhibition also shows how recent technical advances in digital design and fabrication are fueling experimentation with objects such as a wall fragment designed by New York City–based Jesse Reiser, AIA, and Nanako Umemoto, who have perforated a sheet of steel to create a diaphanous and undulating scrim.

But it is outside, on the adjacent lot, where visitors get a real sense of the current potential of the prefabricated dwelling. The houses

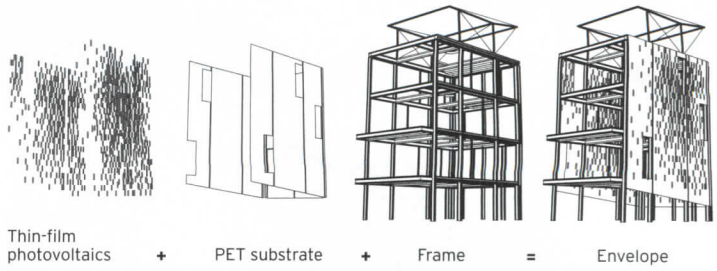
CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ *AIA Continuing Education article. To earn one AIA learning unit, including one hour of health, safety, and welfare credit, turn to page 146 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue can be found beginning on page 149.*

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Explain the advantages of prefabrication.*
2. *Discuss some of the challenges of prefabrication.*
3. *Discuss the different design, fabrication, and assembly strategies represented by the houses in the Museum of Modern Art exhibition.*



The Cellophane House has an energy-generating double-skin envelope.

The Cellophane House (at left above) is a transparent interpretation of a Philadelphia row house. Acrylic interior partitions, walls, and ceilings seem to glow with the help of integrated LED lighting (right).

installed there demonstrate how prefab can be deployed not only to deliver shelter, but also to provide more environmentally responsible, higher-quality buildings, constructed faster, and in some cases, at lower cost. The outdoor exhibition also shows that prefab no longer means a one-size-fits-all, cookie-cutter approach, but instead makes possible adaptable, custom-tailored solutions.

For this part of the exhibition, the museum commissioned houses from five architects after inviting proposals from 21 firms. The completed buildings respond to very different programs, ranging from a vacation house to a one-room cottage for displaced residents of New Orleans. The goal was "to get five very diverse positions," says the show's curator, Barry Bergdoll, MoMA's chief curator of archtitecture and design. They also needed to be commercially viable. "Even if they were prototypes, they had to be absolutely feasible," he says.

The museum announced its selection in early January, leaving the firms about 6 months to finalize designs and coordinate fabrication and installation—a process that each team was required to document in an online journal (www.momahomedelivery.org). And though they each received a stipend of $175,000, the architects were responsible for raising the needed funds in excess of that amount.

All wrapped up

Of the five houses on the MoMA lot, the one that is the most outwardly futuristic is the four-story house designed by Stephen Kieran, FAIA, and James Timberlake, FAIA, of Philadelphia-based KieranTimberlake Associates (KTA). With its exposed structural frame, transparent envelope, and translucent floors and stairs, the Cellophane House may lack the privacy that most home buyers desire, but it "is intended to be more provocative than practical," explain the architects.

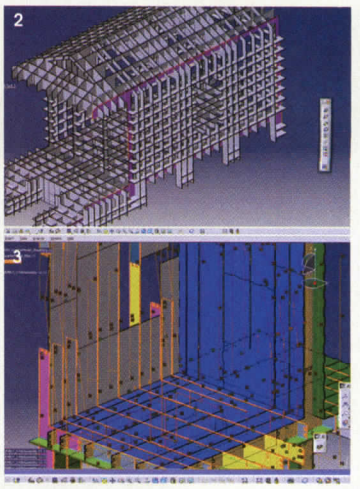
The project continues the investigation into building-supply chains and prefabrication processes that the architects explored with their Loblolly House, a second home for Kieran's family on Taylor's Island, Maryland, completed in late 2006 [ARCHITECTURAL RECORD, November 2006, page 185]. As at Loblolly, Cellophane's structural frame consists of extruded aluminum, off-the-shelf components typically used for factory and temporary-structure applications. These members are attached with the manufacturer's standard fittings, along with custom steel connectors and braces designed to handle shear and wind loads. Since the frame relies on "dry joints," rather than welded connections, the house can be readily disassembled, and individual components can be reused or recycled.

Cellophane's structure is composed of logical and transportable "chunks."

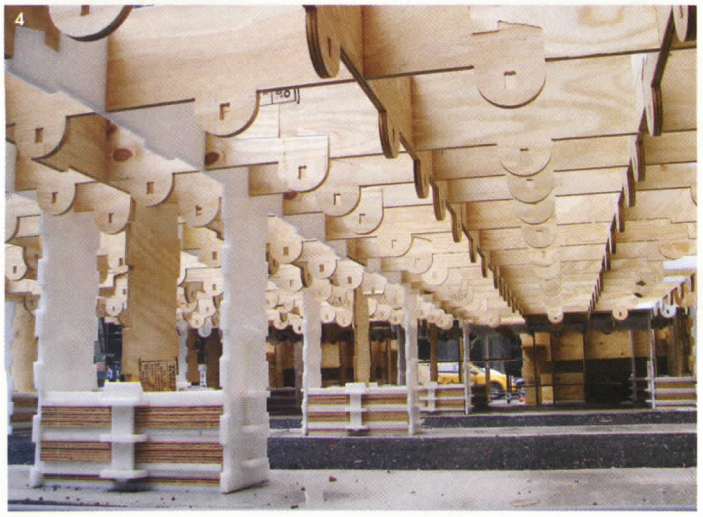
To speed on-site work, KTA divided Cellophane into 14 logical and transportable modules, called "chunks." Each is composed of the aluminum structure with the floor and some perimeter walls attached. The chunks, assembled in Lebanon, New Jersey, by modular fabricator Kullman, were delivered to the site individually on flatbed trucks over three days in late June in the order of their assembly sequence. Other elements, such as most interior wall partitions, were installed after contractors hoisted the chunks into place.

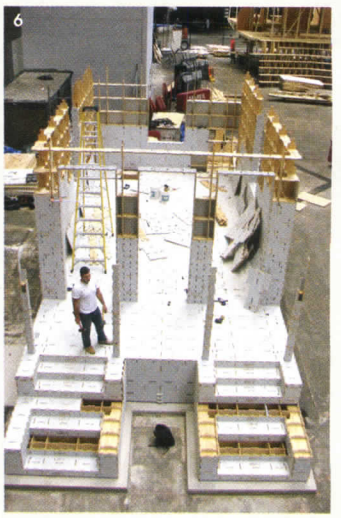
Much of Cellophane is enveloped in a transparent material that KTA has been developing since 2002 and calls SmartWrap. The thin-film skin consists of an outer layer of the plastic polyethylene terephthalate

PHOTOGRAPHY: © MOMA/RICHARD BARNES, EXCEPT AS NOTED; PETER AARON/ESTO (TOP RIGHT); ALBERT VECERKA/ESTO (BOTTOM)



A team from MIT developed a house for New Orleans (1) with a digital model (2 and 3) and a series of physical models and full-scale prototypes. The resulting structure is composed of bilateral ribs, largely of plywood, with some high-density polyethylene elements (4). The pieces were assembled on-site with rubber mallets (5 and 6) and are held together by friction, rather than nails, bolts, or other mechanical fasteners.





(PET), and integrated photovoltaic (PV) cells. An inner skin includes a film that blocks ultraviolet light and helps mitigate heat gain. Between the two layers is a cavity designed to trap heat in the winter and vent it during the summer in order to reduce energy expended on heating and cooling.

Although Cellophane's structure and envelope are unusual, the project's larger innovations are process oriented. Because KTA designed the house in three dimensions with a building information model (BIM), the architects could assume many of the tasks typically performed by a construction manager, such as developing shop drawings, generating lists for ordering parts directly, and tracking data such as costs and weight.

A decorated shed

The one-room house designed by a team from the Massachusetts Institute of Technology (MIT) benefited from many of the same digital processes behind the Cellophane project, but with a completely different result. Instead of a Modernist dwelling of novel materials, Digitally Fabricated Housing for New Orleans is a pitched roof cottage made largely of plywood and adorned with a decorative frieze.

The 350-square-foot dwelling's form and its traditional ornament were controversial among faculty members at MIT, according to Larry Sass, an assistant professor in the school's department of architecture and the leader of the project team. "When I first showed my ornate models to a few colleagues, some were appalled that my work did not reflect the Modern movement in architecture," he says.

For Sass and his students, however, there was no requirement that a prefabricated house conform to a particular language. "This delivery system and digital process is not limited to one architectural style," says Daniel Smithwick, one of Sass's research assistants. "It can produce a Modernist cube just as easily as a Victorian mansion," he says.

The MIT prototype has a structure of bilateral ribs made of more than 4,500 pieces milled from plywood with a computer numerically controlled (CNC) cutting machine—one that relies on digital information to direct the selective removal of material. Over three weeks, the installation team of Smithwick and fellow research assistant Dennis Michaud put the house's notched pieces together on the MoMA lot with rubber mallets. Friction between the elements' tabs, slots, and grooves holds them together, rather than bolts, nails, or other mechanical fasteners. They also applied glue to key joints, though it is not critical to the building's structural integrity, according to Michaud. "It was a concession to the engineer," he says.

Sass and his students developed the "snap-and-fit" assemblies with a combination of parametric modeling and BIM. The resulting digital model described the geometry of the house's components, but also took into account criteria such as material behavior, manufacturing processes,

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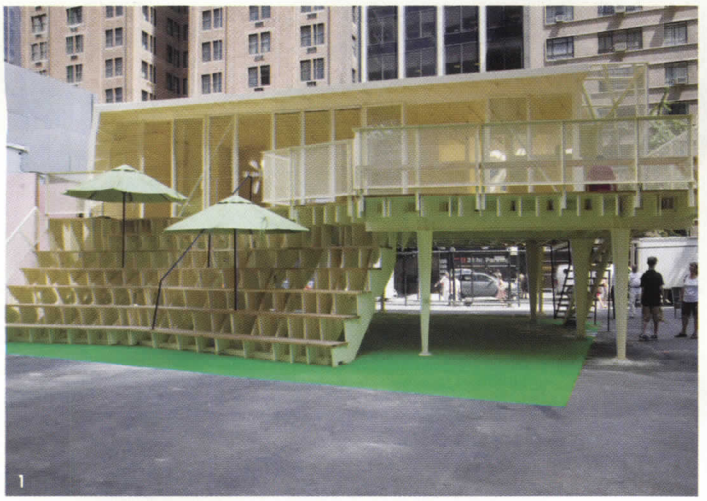
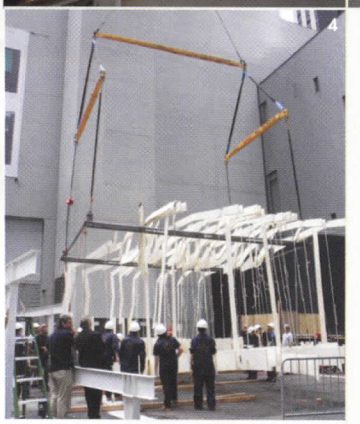
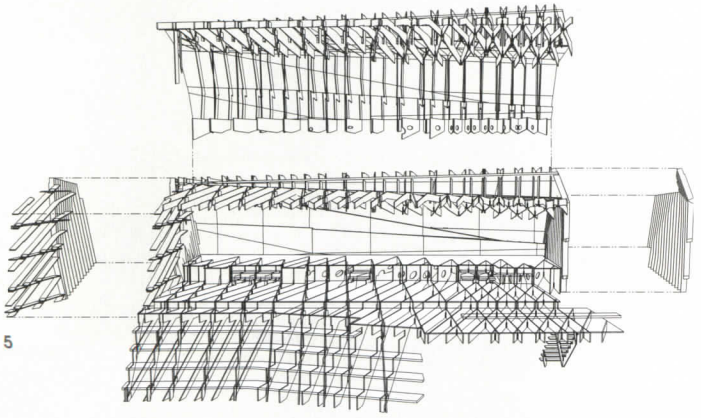




BURST*008 (1) is made of 725 nonidentical plywood ribs joined with steel clips to form a lattice-like structure (2 and 3). The ribs and clips were assembled off-site and packed in three tightly stacked piles (4) for transport to MoMA. There, contractors unfolded the stacks like an accordion (5) and secured them to an already-installed steel piloti system.



Installation of the exterior skin of SIPs (6) completes the BURST*008 structural system. The panels were CNC-milled and cut with grooves to accommodate the underlying ribs precisely. The ribs lock the skin in place and hold it taut.

and the sequence of assembly. Along the way, they tested and adjusted the digital model with a series of small-scale physical models and full-scale prototypes made through laser cutting, CNC-milling, and 3D printing. With the refined digital model, they then cut the building's actual components from 600 sheets of plywood at a lumber yard in Exmore, Virginia.

Once the components were delivered to MoMA in mid-June, assembly proceeded relatively smoothly. However, the interface between the prefabricated foundations and the traditionally constructed slab-on-grade presented a slight glitch. Although Sass and his team had accounted for irregularities in site conditions by designing base blocks that allowed adjustment, they did not know in which direction to move the blocks until several days into assembly, when some parts were not fitting correctly. At that point, they needed a forklift to nudge the already constructed portions of the house together. Almost all of the teams had similar difficulties, according to Jay Gorman, project manager for F.J. Sciame, MoMA's construction manager. "Meeting the ground is one of the challenges of prefab," he says.

A house unfolds

All of the houses on the MoMA lot have very rectilinear geometry, except for the project called BURST*008. Raised on steel pilotis, it has a C-shaped section, one completely glazed elevation, and a bleacherlike stair connecting the living area with the ground. Designed by New York City–based architects Jeremy Edmiston and Douglas Gauthier, BURST*008 is made of 725 nonidentical plywood ribs attached to each other with steel X-clips. The resulting cagelike lattice is clad in structural insulated panels (SIPs)—a sandwich of rigid insulation between two sheets of oriented strand board.

In a process similar to that of the MIT house, the ribs were CNC-milled at Associated Fabrication, in Brooklyn, New York. With specialized nesting software, the company determined how to distribute the rib pieces on the fewest number of standard 4-by-8-foot plywood sheets. But for the MIT project, the layout of the individual elements on the plywood sheets was organized according to the order of assembly. "We had to balance assembly efficiency and waste," explains MIT's Michaud.

The Burst team's choice to nest the irregular pieces meant labor-intensive sorting of all the components. "While this process was time consuming and required attentiveness and many hands, it did not require any specialized building expertise," point out Edmiston and Gauthier.

The two had built a version of the house three years before on the east coast of Australia as a vacation home for a young family. For that house, the architects sorted the pieces on the construction site. But at MoMA, they did not have the requisite layout space. So Gauthier and Edmiston rented a Brooklyn warehouse, where their assembly team

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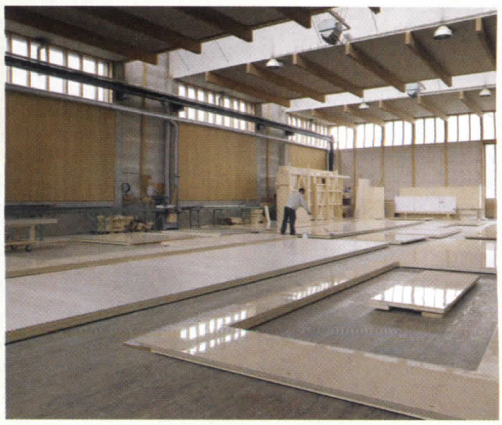

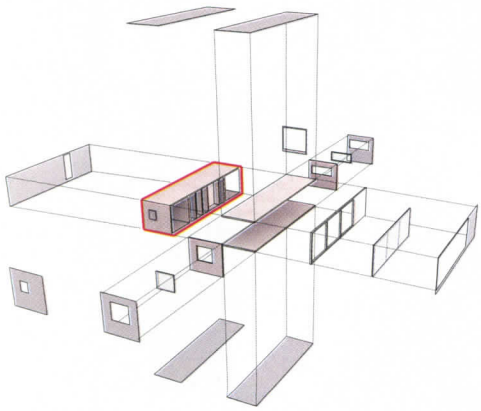

The SYSTEM3 House (above middle) was shipped from its production facility in Austria (above right) in two containers. One transported the completely preassembled "serving" unit (above left), which includes mechanical and electrical spaces, kitchen, and bath. The other container held flat-packed planar elements. The assembly team joined the two types of components (left) on the MoMA lot, completing installation in just a few hours.

In the 75-square-foot Micro Compact Home (foreground right), every space performs double duty. The bed folds down over the dining area (far right), and with the door closed, the entrance becomes a shower. The unit incudes a kitchen, a toilet, LED lighting, and flat-screen TVs.

organized the plywood ribs and attached the steel clips. Contractors transported these preassembled ribs in three tightly packed piles to Midtown on a flatbed truck, and then unfolded the stacks accordion style before securing the lattice to the house's waiting steel pilotis.

The final step of the assembly process was installation of the SIPs floor and cladding, which serves not only as the building skin, but also as an essential part of the structure. Like the ribs, the cladding was CNC-milled and also precut with grooves that accommodate the ribs precisely. The substructure locks the skin in place and holds it taut like a drum, explain the architects.

Of the five houses, Burst had the longest on-site installation process—about five weeks. Given the amount of hands-on assembly required, Gauthier and Edmiston concede that the term "prefab" may not be an entirely appropriate label. "It might be more accurate to call BURST*008 a kit home, but even that is not entirely accurate," they say. "It is all about controlling smaller pieces."

Packed and ready to ship

In contrast, the team responsible for the house called SYSTEM3 reduced on-site assembly almost to its absolute minimum. Designed by Dornbirn, Austria–based architects Oskar Leo Kaufmann and Albert Rüf, the house is an elegant spruce box 38 feet long, 15 feet wide, and just over 8 feet tall. It arrived at MoMA from the fabrication site in Reuthe, Austria, in two halves, each in its own shipping container. One container transported the completely preassembled "serving" unit, which provides the house's infrastructure, such as mechanical and electrical spaces, the kitchen, and the bathroom. The second container held only planar elements, including the floor, the roof, and walls. These components, flat-packed with the necessary fasteners and assembly tools much like an Ikea bookcase, were put together on-site to form SYSTEM3's "naked" space—the half of the house defined only by the inhabitants' furniture and devoted to activities like sleeping and dining.

The exterior walls of the serving and naked units are made of single slabs of 4-inch-thick engineered wood. Although the slabs had been CNC-milled to tolerances within 1 mm, Kaufmann and Rüf had concerns that the elements would not fit together once they arrived at MoMA. They worried that changing temperature and humidity levels during the trans-Atlantic voyage might cause the slabs to warp. And they worried that such deformation would cause collateral damage, such as cracking of the factory-installed windows. However, the containers arrived at the site at 6:30 a.m. on June 23rd with their contents in pristine condition. And by early afternoon, the last element, the SYSTEM3 roof, had been hoisted into place. "It was almost like they practiced in Austria," says Gorman.

PHOTOGRAPHY: © ADOLF BEREUTER (TOP THREE); DENNIS GILBERT (BOTTOM RIGHT); DIAGRAM: COURTESY KAUFMANN/RUF

Project: CSU Fullerton Recreation Center in Fullerton, CA
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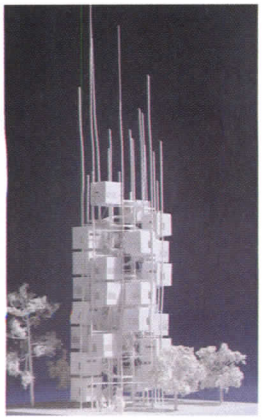

Horden envisions a vertical village of MCH units.

High-tech cocoon

The only house that was faster to install was the diminutive Micro Compact Home, or MCH, for short. At just 75 square feet and 2.2 tons, the timber-framed, aluminum-over-plywood-clad MCH [RECORD, April 2007, page 165] was transported from its Uttendorf, Austria–based manufacturer by container ship and then by pickup truck to the MoMA lot. The installation team secured the unit's three-legged base to its foundations and connected it to a power supply in less than four hours.

The cocoonlike MCH is intended to provide "short stay, smart living" for one person, or 1.5 people counting the occasional guest, according to Richard Horden, a principal at London-based Horden Cherry Lee. Horden, along with Munich-based Haack + Höpfner Architects, designed the house.

Inside the MCH, every space performs double duty. For example, the bed folds down over the dining area, and when the door is closed, the entrance morphs into a shower. The house also includes a kitchen, a toilet, and two flat-screen televisions.

The 8-foot-8-inch cube not only has a minimal physical footprint, but also a small carbon footprint. Taking into account appliances, LED lighting, air-conditioning, and heating, the unit would require about 86 square feet of PV panels and a small wood pellet stove in order to operate off the grid in Central Europe, according to Horden.

The MCH is already commercially available for about $78,000, and 15 units have been produced to date. Seven are being used for housing at the Technische Universität of Munich. Horden, who teaches at the school's department of architecture, stays in one two nights of each week.

The MCH could be grouped or clustered to form a high-rise or a Family Compact Home (FCH). For the single-family version, Horden suggests that children have their own units, complete with kitchen. "So that they learn to manage on their own," he says, reminding us that the cute cube has a serious agenda. "There are social implications," he says. ■

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QUESTIONS

1. The houses in the MoMA Home Delivery exhibition demonstrate that prefabrication can provide which?
   a. adaptable and custom-tailored solutions
   b. environmentally responsible buildings
   c. fast on-site construction
   d. all of the above
2. All of the following describe the Cellophane House structural frame except which?
   a. it is held together by dry joints
   b. it has welded connections
   c. it has custom-designed connectors and braces that resist shear and wind loads
   d. it can be readily disassembled
3. All of the following are true regarding the "chunks" that make up the Cellophane House except which?
   a. The architects used the term to refer to logical and transportable modules
   b. the chunks helped speed on-site construction
   c. the chunks were delivered to the site in order of assembly
   d. the chunks included all interior partitions
4. The envelope system of the Cellophane House includes all except which?
   a. polyethylene terephthalate
   b. photovoltaic cells
   c. acrylic panels
   d. ultraviolet light–blocking film
5. Because the Cellophane House was designed using a building information model, the architects could perform which tasks?
   a. develop shop drawings
   b. generate lists for ordering parts
   c. track data such as costs and weight
   d. all of the above
6. The plywood components in the MIT prototype are held together with which?
   a. X clips
   b. friction
   c. bolts
   d. nails
7. The MIT team needed a forklift to nudge already constructed portions of the house together because of which reason?
   a. the house's base blocks did not allow for adjustability
   b. the house's base blocks had been fabricated incorrectly
   c. the team members had not accounted for irregularities in site conditions
   d. the team members did not know in which direction to adjust the base blocks until several days into the assembly process
8. The ribs that form part of the structure of the Burst*008 project were which?
   a. sorted off-site
   b. sorted on the MoMA lot
   c. organized for CNC-milling on 4-by-8-foot plywood sheets in a way that would maximize assembly efficiency
   d. attached to each other using rubber mallets
9. Which of the following is true regarding the System3 naked space?
   a. it arrived at the site as a completely preassembled unit
   b. it arrived at the site as planar elements
   c. it arrived at the site in two shipping containers
   d. it contains the kitchen and the bath
10. The exterior cladding of Micro Compact Home is made of which?
   a. SIPs
   b. 4-inch-thick engineered wood slabs
   c. aluminum and plywood
   d. acrylic panels

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Program title: "Some Assembly Required," Architectural Record (09/08, page 138). 098EDIT1

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Large, Low Velocity Fans: Making Energy Efficiency a Breeze

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Let's face it, not everyone can afford air conditioning or likes its negative environmental impact. One energy-conscious cooling alternative harkens back to the pre-air conditioning days — the ceiling fan. But this is not your grandmother's version. The traditional ceiling fan has been rethought and right-sized for commercial spaces — and the latest technology in industrial-grade air movement has been custom-engineered for shopping malls, office buildings, churches, recreational facilities and the like. Moreover, it has been executed on a scale large enough to make it a significant component of a cost-effective, energy-efficient building design.

Today's large, low velocity ceiling fans make the statement that it is possible to create a beautiful environment utilizing serious energy-saving green products — an advance that offers the architect greater flexibility in aesthetic choices than has previously been available. This article will discuss the characteristics of large, low velocity ceiling fans, as well as their sustainability quotient, with an eye toward detailing energy costs. Practical considerations of specifying large, low velocity fans in large spaces will also be covered.

WHAT IS A LARGE, LOW VELOCITY CEILING FAN?

Large, low velocity ceiling fans, also known as high volume, low speed (HVLS) fans, operate on essentially the same principle as their conventional ceiling fan counterpart. These fans, however, are significantly larger and operate at slow speeds (60 rpm or slower) to minimize power usage. The fans use super-sized airfoils rotating at low speeds to move large volumes of air quietly and efficiently. Typically, these large ceiling fans range in diameter from 6 to 24 feet, and use specially engineered airfoils designed to provide for optimum airflow at the lowest possible operating cost. These fans may have from six to ten blades that slowly revolve to create a massive, gentle current of air in all directions, covering up to 30,000 square feet of space. The largest diameter fans (24 feet) have a capacity of over 350,000 cubic feet per minute (cfm) of air movement. Because they are capable of moving vast volumes of air, large, low velocity ceiling fans are commonly used in large spaces with ceilings ranging from 15 to more than 120-feet high.

Because these large fans operate with variable frequency drives (VFD), they can be operated at higher speeds — 30 to 60 revolutions per minute (rpm) — in summer and at lower speeds

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Large, low velocity fans are an aesthetic, energy-efficient way to keep large spaces comfortable.

CONTINUING EDUCATION

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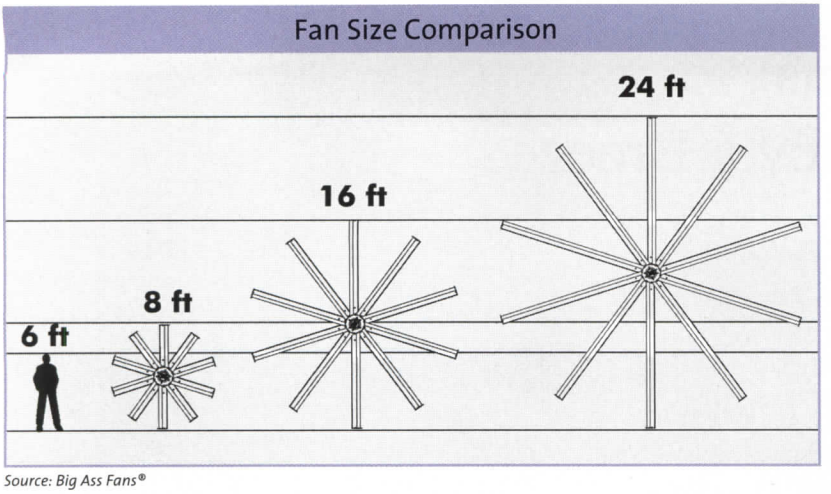
Learning Objectives

After reading this article, you should be able to:

- Discuss the characteristics of large, low velocity ceiling fans and recognize the latest developments in fan technology
- Explain the energy implications of various air movement methods
- Specify fans for large spaces



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— 10 to 15 rpm — in winter. They typically have small motors ranging in size from ½ horsepower to 2 horsepower, and are used for cooling, heat recirculation, ventilation, air distribution and as alternatives to air conditioning in large facilities. They are vastly more effective than high-speed fans, moving up to 25 times as much air using motors that the same size, or, at most, no more than three times the size as those used in small, high velocity fans, Also, due to their low operating speed, large, low velocity fans are very quiet.

Large, low velocity fans were invented a little over a decade ago for large industrial and agricultural settings as an alternative to multiple conventional high speed fans, those large, caged fans that are typically freestanding or wall-mounted. The construction of these high speed fans and the speed at which their blades move make them unavoidably noisy. While they do move a considerable amount of air, the air is circulated directly in front of the fan, providing some cooling in limited areas with little mixing of air or heat recirculation, the thermal differential that naturally occurs as heat rises. Moreover, the high velocity of the air moved by these smaller fans is uncomfortable and disruptive for people and, in agricultural settings, for animals stationed directly in the airflow stream. Finally, the sheer quantity of the smaller fans needed to make a large space comfortable create additional safety concerns and equipment maintenance and operating cost issues.

With their superior airflow, energy efficiency, and quiet operation, large, low velocity fans rapidly gained acceptance in agricultural settings, and also were quick to be adopted as a cooling alternative for spaces where air conditioning was impractical or too expensive. Today, these fans are recognized as a technology with wide application and proven results in reducing or eliminating the cost of mechanical cooling for large spaces.

OPERATING PRINCIPLES

Air is stratified into warm and cool layers, with the warmest air rising to the ceiling. It is not unusual for the temperature at the ceiling in tall, heated spaces in the winter to be 20 to 30 degrees warmer than it is at floor level. Proper use of large, low velocity ceiling fans can virtually eliminate this stratification by gently driving the ceiling air downward and properly mixing the air to eliminate hot and cold spots. Using large, low velocity fans to maintain a constant air temperature throughout the space, building operators can actually lower thermostats, keeping everyone comfortable and, better yet, generating heating cost savings of up to 25 percent or more. Moreover, during seasonal transitional periods, large, low velocity fans can be run on slow speed to bring the heat down from the ceiling, delaying start-up of the heating system and enabling early shut down in the spring.

With their slow turning, quiet, non-disruptive air movement, large, low velocity ceiling fans are increasingly used in office spaces. For Jonathan Arnold, founder of Arnold Imaging, a company that creates photorealistic renderings, animations and interactive content for large scale real estate developments in Kansas City, Missouri, the concern was heating an office that has 20-foot ceilings, slab-on-grade uninsulated, exposed concrete floors and four 16-foot wide garage doors that flank the space. Arnold was reluctant to heat the 10 feet directly below the ceiling to 90 °F to get the bottom of the space to feel remotely comfortable. With a large, low velocity ceiling fan, slow air movement gave Arnold Imaging the ability to push that heat back down in winter without the expended energy and cost of a conventional HVAC system.

Large metal fans fit in well with the office's unfinished ceiling and exposed trusses. Arnold reports flipping on a switch and feeling the effect of having natural air, rather than cold or hot air. "Instead of having 25 separate fans running, there are two big fans that cover the whole office," says Arnold, who appreciates the aesthetic and energy-saving properties of a large fan. "A three-phase motor versus line-voltage inefficient fans running makes a lot of sense."

Because large, low velocity ceiling fans effectively move air, they also result in benefits in improved air quality, and can reduce condensation, mold growth and wet spots on floors.

In hot weather, fans are operated at the upper range of speed to circulate the air within a facility. The circulation results in an even temperature throughout the area covered by the large fans. People are cooled by the breeze that is created, even though the temperature has not been lowered; it is this "wind chill" effect that makes building occupants feel cooler and more comfortable.

Because large, low velocity ceiling fans effectively move air, they also result in benefits in improved air quality, and can reduce condensation, mold growth and wet spots on floors. All of this makes the technology ideal for many large warehouses, distribution centers, and manufacturing plants as well as some institutional, aviation and sports facilities.

The 10,000-square-foot Alcoa Fujikura Corporate Hangar located at the San Antonio International Airport houses one corporate jet year-round. Without air conditioning, the eight employees who perform regular aircraft maintenance used small, high-velocity fans to beat the heat. But with unforgiving summer temperatures, and

Large, low velocity ceiling fans worked to eliminate condensation on the plane.

problems with condensation forming on the plane, the small fans couldn't provide the air movement and cooling breezes they required. "Besides the hot and humid weather, when the plane would come back from altitude, it would be covered with condensation from the temperature differences and would be dripping well through the night," says Ron Hoffman, Aircraft Maintenance Manager. "On humid mornings the floor would be slippery from the moisture coming up through the concrete. Not only was it a nuisance, it was a maintenance issue, because that condensation can cause corrosion on the aircraft." The hangar's round high-velocity floor fans were substituted with a 24-foot-diameter large, low velocity ceiling fan — a move that Hoffman claims resulted in a lower operative temperature and increased comfort in the hangar and immediate elimination of condensation on the incoming plane.

As an alternative to air conditioning, large, low velocity fans can improve airflow in warehouses and distribution centers where extreme temperatures can have a negative impact on products and employees. Bill Oliver owns Oliver Winery in Bloomington, Indiana, where the warehouse has 32-foot-high ceilings. Wine is stacked close to 20-feet high, exposing the bottles stored at the top to the warmest air which rises to the ceiling, a situation that compromised the integrity of the wine. In balancing floor to ceiling temperature differences, "Regular ceiling fans were not doing the job," says Oliver, explaining that wine needs to be stored at temperatures in the upper 60s or low 70s °F. Changes in temperature will make the fluid expand and contract, creating different pressures in the bottle, with the change in temperature acting to prematurely oxidize the wine. "A steady temperature is as important as the right temperature," adds Oliver, who installed large, low velocity fans to remedy the problem and recommends them for any situation where uniform air temperature and movement is desired without the whir of multiple standard ceiling fans.

ADVANCED TECHNOLOGY FANS

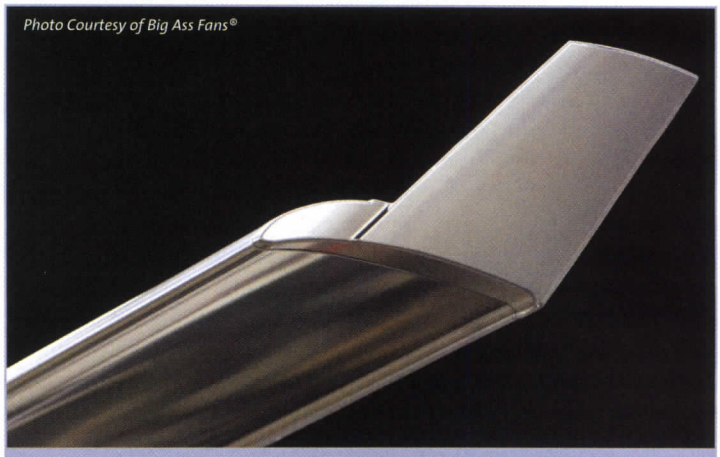
The latest technology incorporated into the design of large, low velocity ceiling fans makes them virtually silent, increases the aesthetic options available for integrating the fan into the visual scheme of the environment and enables a greater variety of fan controls and decorative accessories.

Eliminating any noise from a 12-foot-diameter revolving machine that weighs over 200 pounds, and hangs high in the air is based on extensive engineering. The key to today's silent fans lie in their specially designed motors. Cutting edge research and development has replaced traditional, inefficient gearboxes with high-powered, low speed electronically controlled motors. The advanced technology drives the blades of the large fan without relying on a gearbox, eliminating noise and potential oil leaks for an effortless experience.

Other innovations are made possible by the onboard placement of the motor's integrated electronic control system, rather than the conventional remotely located variable frequency drive. Fans can be operated from a small and stylish wall-mounted LCD panel, providing operating status of the fan. Further, new technology permits the attachment of accessories such as lights, loudspeakers, and surveillance cameras on the bottom of the fan, something which is not possible with existing, gearbox-driven fans.

These new technology fans have 10 blades with a patented airfoil design optimized to produce large volume, turbulence-free airflows at low blade speeds with a decibel reading less than that of a slight rustling of leaves. Turbulence is eliminated and quiet operation enhanced by the aerodynamic design.

These fans were designed for clean, quiet applications not in sync with the more industrial nature of the typical big fan. The typical large, low velocity fan, designed for industrial and agricultural applications, generates slight noise from moving gears and from



The upswept winglet profile actually helps to push more air down to the floor over a greater area.

Photo Courtesy of Big Ass Fans®

A large, low velocity fan in candy-apple red makes a dramatic statement.

electrical control units. In a noisy warehouse situation, the noise of the fans would be negligible. Not so in an auditorium or church. While industrial fans might provide non-industrial customers the function they desire, the industrial aesthetic may not be preferred.

SPECIFICATION CONSIDERATIONS

Aesthetics

Utilizing a large, low velocity ceiling fan in a space for air movement can not only increase occupant comfort through air movement and increase the energy efficiency of the space, it can provide a striking aesthetic. Manufacturers have made possible a number of customization options. Airfoils can generally be powder-coated in a wide variety of finishes and in virtually any color imaginable.

With and Without an HVAC System

There are several considerations in specifying a large, low velocity fan in a particular space. One main consideration is whether or not an HVAC system is present. In a building without an HVAC system, the fan will be the primary means of supplying thermal comfort during the summer. This generally means specifying fans capable of generating higher air velocities, either through larger fans or a greater number of more conventional fans.

In a building with an HVAC system, the large, low velocity fan is part of the system, not the primary means of cooling. Generally, it is advisable to integrate the fans into the HVAC system via the building automation system, if the building has one. In many cases, large, low velocity fans can be used to help distribute the HVAC system air more evenly throughout the space, minimizing the need for extensive distribution ductwork, which can save on the HVAC system's initial cost and energy usage.

After undergoing a dramatic facelift in 2003, Wisconsin's Green Bay Packer's Lambeau Field became the new high-tech gateway to Packerland, with an atrium featuring 94-foot-high ceilings and towering glass wall. According to Mike Moynihan, HVAC Manager, even though the structure had two air handlers, all the hot air remained trapped at ceiling height, leaving occupants very cold at ground level when Wisconsin temperatures dropped. "We had our air handlers set to their highest capacity — 115 °F to 120 °F — and they still weren't doing what we needed them to do," says Moynihan, explaining that with the addition of three 24-foot-diameter large, low velocity fans, the facility could provide a comfortable temperature at floor level. "We gained the heat we needed. When it's 20 degrees or less outside, it's 68 to 70 degrees on the floor," Moynihan says.

As in the case of the Orange Peel, a live music club in Asheville, North Carolina, the air handling system, which does not have a cooling component, was adequate until the space was at capacity — which happened frequently when big-name acts were on the premises. Then, airflow became restricted and the packed-in patrons were suffering. Dan Cochran, Production Manager/Technical Director of the facility, noted a 20-foot-diameter large, low velocity fan was added to supplement the facility's air handling system. "It saved a lot of money by allowing us to forego air conditioning," says Cochran, noting that the fan quickly cools down the occupants at capacity and helps dry the floor after cleanup. As every space is different, however, it is recommended that the manufacturer perform a thorough site evaluation to determine the best solution for the individual space.

Photo Courtesy of Big Ass Fans®

Large, low velocity ceiling fans at Lambeau Field Atrium enabled air handlers to run at 70 °F during winter events.

Continues at ce.ArchitecturalRecord.com.

See Quiz on the Next Page

or

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Program title: **"Large, Low Velocity Fans: Making Energy Efficiency a Breeze" (09/08, page 149).** AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit. (Valid for credit through September 2010). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. Large, low velocity ceiling fans are also known as:
- ❑ **a.** high velocity high speed fans.
- ❑ **b.** high volume low speed fans.
- ❑ **c.** low velocity high speed fans.
- ❑ **d.** low velocity low speed fans.

2. Because large fans operate with variable frequency drives, they:
- ❑ **a.** can run at higher speeds.
- ❑ **b.** can be reversed.
- ❑ **c.** are more energy efficient at low speeds.
- ❑ **d.** can destratify air.

3. Compared with high speed fans, large, low velocity fans:
- ❑ **a.** don't move as much air.
- ❑ **b.** move twice as much air.
- ❑ **c.** move 25 times as much air.
- ❑ **d.** move half the air.

4. Large, low velocity fans:
- ❑ **a.** can generate heat cost savings of 25 percent or more.
- ❑ **b.** provide negligible heat cost savings.
- ❑ **c.** should not be used with an HVAC system.
- ❑ **d.** do not destratify air.

5. The key to today's silent fans lies in:
- ❑ **a.** their manufacturing process.
- ❑ **b.** their aesthetics.
- ❑ **c.** their blade lengths.
- ❑ **d.** their electronic motor design.

6. Used in conjunction with an HVAC system, large fans:
- ❑ **a.** don't move air as efficiently.
- ❑ **b.** can reduce the need for ductwork.
- ❑ **c.** create airflow problems.
- ❑ **d.** complicate air destratification.

7. Fan installation instructions provide for compliance with:
- ❑ **a.** ASTM standards.
- ❑ **b.** ASME standards.
- ❑ **c.** local building codes.
- ❑ **d.** NFPA.

8. Large, low velocity ceiling fans generally need this amount of space above the fan itself:
- ❑ **a.** 10 feet
- ❑ **b.** 20 feet
- ❑ **c.** 12 to 18 feet
- ❑ **d.** 3 to 7 feet

9. If the fan is designed to operate efficiently at very low speeds, as are most large, low velocity fans, there is no need to reverse the fan. True or false?
- ❑ **a.** True
- ❑ **b.** False

10. The fan controller should be checked according to the "tug test":
- ❑ **a.** annually.
- ❑ **b.** monthly.
- ❑ **c.** every six months.
- ❑ **d.** when a humming noise is evident.

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Material resources used: Article: This article addresses issues concerning health and safety.

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EARN ONE AIA/CES HSW LEARNING UNIT

Raising the Energy-efficient Roof with Concrete Tile: Beyond Traditional Curb Appeal

Architects face many issues in specifying a concrete tile roof and code-compliant installation to ensure a sustainable, quality roofing system in both residential and commercial settings.

Provided by Hanson Roof Tile

The roof is often a structure's most commanding visual element — and a tile roof is hard to beat for sheer curb appeal. A roof typically represents 40 percent of the visual area seen on a building structure. Technology has enabled manufacturers to produce concrete roof tiles to suit almost any architectural style, from authentic Spanish to New England Colonial, historic to contemporary. Roof tiles have been used for hundreds of years and concrete tiles have been widely considered an energy-efficient choice of roofing material. Concrete tiles available on the market today can be manufactured with reflective surfaces to further lower energy costs and increase occupant comfort. In most climates, concrete tiles make for a durable, sustainable roof that can outlast the structure it covers — provided the installation is properly executed.

CONCRETE TILE BASICS

Currently, concrete tile is used mostly in the southeast, the southwest, and California, where it dominates the tile roofing market because of its lower life cycle cost relative to other roofing products. In the United States, concrete roof tiles are popular primarily in the Sunbelt states. In other countries they have long been used in both high-wind and cold climates.

Physical Appearance

Concrete roof tiles are available in three basic profiles: high-profile S-tiles, or barrel tiles; medium-height tiles with a double-S shape; and flat tiles, which resemble wood shakes or slates. Roofs will require at least two different types of tile: standard field tiles and accessory trim tiles that complement the specific tile profile selected. Concrete roof tiles are typically interlocking. The interlocking tiles are a more weather-tight arrangement that is better suited to areas with heavy rains and snow.

A concrete tile roof makes a statement in residential (seen here) or commercial architecture.

Competitively priced and readily available, concrete tiles are made from sand, cement, synthetic pigment and water. The mixture is then forced through an extruder under high pressure to make different tile profiles. Concrete roof tiles can have smooth or textured surfaces and edges.

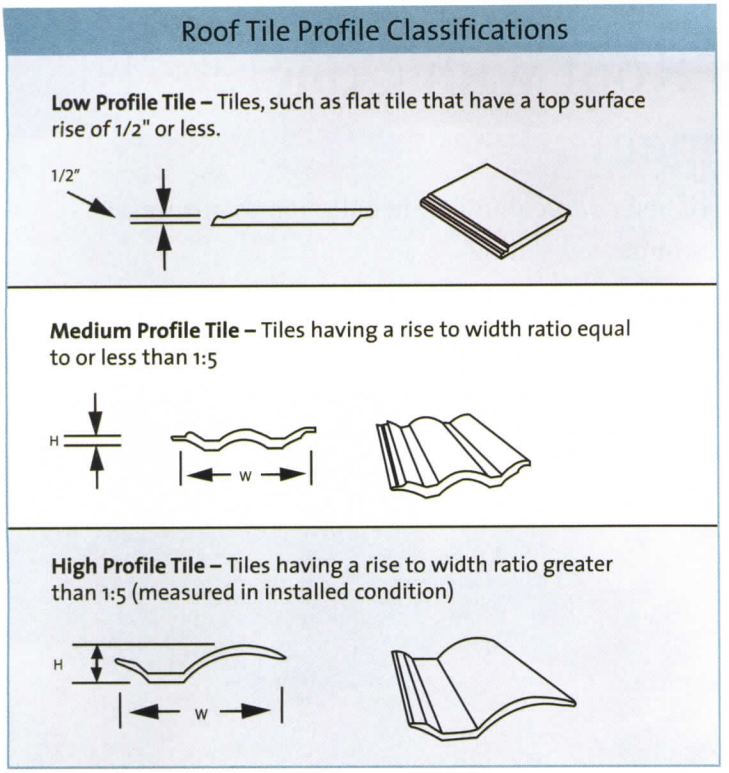
Color may be added to the tile. In the color through process, pigments are added so that the color is mixed all the way through the tile. In slurry coating, generally used in warmer regions, a colored concrete top layer is bonded to the uncolored tile base. One-color, blended colors or a combination of shades can be mixed to create uniform or random patterns, giving concrete roof tiles a broader color palette. Multi-color tiles are intentionally manufactured with varying amounts of flashing in differing locations on the tile. This breaks up the potential for monotony and helps to minimize

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Raising the Energy-efficient Roof with Concrete Tile: Beyond Traditional Curb Appeal.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 159, then follow the reporting instructions or go to **ce.ArchitecturalRecord.com** and follow the reporting instructions.

Learning Objectives
After reading this article, you should be able to:

- Discuss the basic characteristics of concrete roof tiles
- Identify the environmental benefits of concrete tiles
- Communicate the critical aspects of installation



Source: Tile Roofing Institute

the possibility of vertical or diagonal lines down the roof. In a multi-color tile roof there can be as many as seven to ten different colors with varying shades of color and flashing within one blend.

Architects should see samples that exhibit the characteristics that they are specifying or, ideally, view an installed roof with the same characteristics they have in mind. The trim tiles that come with field tile are typically manufactured to match the color of the field tiles. Even with stringent quality control standards, product shade variations will occur. This shading, when properly blended throughout the roof, contributes considerably to the uniqueness of every concrete tile roof.

After the extrusion process, the individual wet tiles are cured in a chamber, a process that involves controlled heat and humidity to harden or "cure" the concrete to reach the required strength. The cured tiles are stacked on wooden pallets and packaged for sale. Manufacturers test everything from raw materials to the finished product to ensure both regulatory compliance and internal quality control standards. Other characteristics to note about concrete tiles are flexural strength, water absorption, permeability, and resistance to freeze-thaw cycles.

Ratings

Concrete roof tiles are completely non-combustible and carry an Underwriters Laboratories (UL) Class-A fire rating, the highest fire-resistant rating available; Class-A indicates the roofing can withstand severe exposure to fire originating from sources outside the building. Because tile roofing systems allow air circulation under the tile, they reduce heat transfer to attics during fires. In comparison, most house fires spread because embers ignite roofing materials, accelerating combustion.

SPECIFYING ISSUES

Aesthetics

Concrete tiles are available in profiles, styles, finishes and colors that can imitate the appearance of clay, slate and cedar shake, replicating centuries-old roofing materials. Regional preferences exist. Popular in northern California, for example, is a technique known as "boosting," which involves stacking barrel tiles on beds of mortar to create a time worn look. In Florida, the classic terra-cotta Mediterranean-style barrel tiles remain a most popular option. Flat tiles are becoming increasingly more popular in the Carolinas and Texas where brick and stone are commonly used in both residential and commercial building.

Efflorescence

A colorfast synthetic iron oxide pigment is mixed throughout the entire thickness of the tile to ensure consistent color distribution and uniform weathering. Occasionally, due to the nature of concrete products, an unpredictable, temporary change in appearance known as efflorescence might take place. It appears as a white haze.

In order for efflorescence to develop on the surface, three physical conditions must be present. First there must be soluble salts in the material. Second there needs to be moisture coming into contact with the salts and thirdly there must be a path for the soluble salts that are absorbed by the moisture to migrate to the surface. If all three of these conditions are present with the new product, then as the moisture reaches the surface, the moisture evaporates, leaving the salts behind. Concrete, even though it is very hard, contains soluble salts and also has very small pores, which allow the salts in solution to migrate to the surface.

"Boosted" tiles are popular in northern California.

Therefore, efflorescence is possible but does not necessarily occur. The duration of efflorescence, when it occurs, varies greatly and is primarily a function of environmental conditions, such as frequency of rain and drying, exposure and shade. Ultimately, the efflorescence will wash away and the original tile color will again become apparent. Products manufactured at the same time generally effloresce uniformly. In products manufactured at different times efflorescence may occur in a completely different manner. It should be remembered that the efflorescence phenomenon is temporary in nature and that it is a superficial phenomenon that in no way affects the quality or functional properties of roof tile.

Weight

Weighing in at an average of ten pounds per square foot, concrete tiles are heavier compared to asphalt shingles, which weigh about 2-1/2 to 4 pounds per square foot. The added weight of concrete tiles means rafters might have to be reinforced.

However, a concrete tile roof generally weighs no more than three layers of asphalt shingles — a weight which most residential roofs have been designed to support. To be sure, a reexamination of the roof framing systems is advisable, particularly in re-roofing situations. Often, in order to withstand the added weight of concrete tile, a truss or rafter may need to be reinforced; this is a common and inexpensive method to assure a greater load. Lightweight concrete tiles are available, made of an aggregate, and weigh 7.5 pounds or less per square foot; however, they are not as durable compared to standard weight tiles and are more susceptible to breakage from hail, snow and foot traffic.

Codes

In order for a concrete roof tile to conform to building codes, it must be manufactured to ASTM C-1492 and ICC AC 180 test standards. These standards address material characteristics and physical properties such as strength, water absorption, permeability, freeze/thaw resistance and dimensional consistency. The International Building Code and International Residential Code contain provisions for tile roof installation, in Section 1507.3.8 and section R905.3.7, respectively. The Florida Building Code, among the strictest in the country, sets forth stringent requirements for the way tile roofs are to be fastened (Section 1609) in high-wind regions.

Regional Variations

According to the Tile Roof Institute, many homeowners living in areas of heavy snowfall mistakenly believe that snow accumulation on a tile roof is dangerous and arrange for snow removal which, in most cases, is not only unnecessary, but also dangerous and potentially damaging to the roof tiles. Snow is an effective insulator, and snow guards positioned across a roof's surface can confine snow safely on roofs until the spring melt.

On the other hand, architects specifying tile in humid regions like south Florida and south Texas must be aware of the effects of mold and mildew which thrive in shady or moist areas. The problem can be reduced through proper drainage and a roof orientation that exposes shadowed and wet areas to sunlight. In Florida, fungus can collect on roofs, and the temperature never gets cold enough to kill it. Although the fungus does not damage the roof in any way, it can be unsightly. A soft pressure washing with a 5 percent bleach solution will help destroy the spores. Annual or biannual professional cleaning of mold and mildew is best performed by professional roof tile cleaners with the proper roof tile cleaning equipment and environmentally friendly cleaners.

Life Cycle Cost Considerations

Compared to other roofing materials, concrete roof tiles can be substantially more expensive to install. Due to their extreme durability, however, the cost of concrete roof tiles can be favorably distributed over an extended life cycle. Depending on the weather conditions and the quality of the installation, concrete tile roofs are virtually permanent roofs, meaning they can last 50 to 100 years or more — during which time wood, asphalt, and metal might be replaced up to three times. Because of the structural integrity and proven durability of concrete roof tiles, many leading roof tile manufacturers offer 50-year or limited lifetime product warranties, among the best in the industry.

Depending on the weather conditions and the quality of the installation, concrete tile roofs are virtually permanent roofs, meaning they can last 50 to 100 years or more.

For their own offices, Hill Foley Rossi and Associates, an architectural design firm in Duluth, Georgia, specified a flat concrete roof tile designed to look like slate but at a fraction of the cost. "It's a little less expensive than an authentic slate roof, but with the same qualities," said Architect Mike Rossi, a principal with the firm. "You can have a concrete roof tile roof on your building for 50 years minimum, whereas with other materials like modified bitumen you will need to replace it in 20 years. Over the long run you save money because you have little to no maintenance with roof tile." To complete the look of permanence, HFR combined heavy masonry products on the building's exterior walls and included heavy gable

Architects Hill Foley Rossi and Associates chose flat concrete roof tiles for their offices.

elements that give the 17,500-square-foot structure a craftsman-like lodge feel. "The roof is often the first thing people notice about our building," Hill said, noting that the aesthetic qualities of concrete roofing are becoming increasingly acknowledged in inland regions of Georgia and the Carolinas, where roof tile has not been as widely used as in coastal areas and in Florida.

HFR also specified the same tile on the Duluth City Hall, a building they designed about a mile from their office. "In the past couple of years we have fallen in love with roof tile," Rossi said. "The thick profile looks very solid; it gives a nice top to a building. We've tried other roofing products, but concrete tile gives depth and a nice profile to make for a very sound looking roof."

Maintenance

Concrete tile roofs are pest-resistant, do not rot in wet climates, are not damaged by heat or sunlight and resist fire and harsh weather better than other roofing products, particularly asphalt which harsh sunlight can cause to become brittle and weaken shingle adhesive, increasing the likelihood of shingles tearing or blowing off in bad weather. All roofs require some level of maintenance, with many roofing systems requiring coating, painting, cleaning, and/or sealing the majority of the roof surface. Under normal conditions, tile roofs require minimal maintenance mainly in the areas of gutters, flashings, and venting.

Under normal conditions, tile roofs require minimal maintenance mainly in the areas of gutters, flashings, and venting.

Occasionally a broken, cracked or missing tile must be replaced. When this occurs, the damaged tile can be removed and replaced in the same manner the other tiles are attached to the roof. If mechanical fasteners have been used and the nail or screw must be cut, care should be taken not to rip the underlayment. Foam attachments can be cut away. For best results, the replacement tile can be secured by a tile adhesive, a clip, or foam. If the underlayment is slightly torn, mastic can be used to mend the tear. Larger tears require new underlayment secured with mastic.

It is not uncommon that replacement tiles will not be an exact match. While matching the color is desirable, matching the profile is essential. Reclaimed tile yards can often be a source of "good matches" particularly if the tile roof was installed some time ago and the tiles have been discontinued.

To protect the investment in the roof and prevent potential problems, a roof should be regularly inspected. If it is necessary to walk on the roof, soft-soled, non-slip shoes should be worn; it is advisable to step only on the lower portion of the tile where one tile overlaps the other, referred to as the head lap. For best results, professional roofers experienced with the unique features of tile roofs should perform any necessary maintenance and cleaning.

Sustainability

Concrete roof tiles are manufactured from natural materials: sand, cement and water. As a result, concrete roof tile is more environmentally friendly compared to other roofing products such as asphalt composition shingles or metal roofing. Old roof tiles can be recycled to create new tiles and other products. Not only does tile's less frequent replacement translate to lower life cycle costs for the consumer, it represents an overall reduction in the use of energy and natural resources.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System has become the accepted measure for sustainable development for green building construction within the USA. Concrete roof tile can be used towards achieving LEED credits in several new construction or major renovation categories.

For dramatically increased energy savings, manufacturers now offer solar panels integrated with roofing tiles. One aesthetically pleasing option that has shown promise is pre-engineered photovoltaic modules interlocked with roof tiles or other roofing materials. In a hot, sunny climate, a 200-square-foot such system has been shown to generate some 70 percent of the power for a 1,500-square-foot home.

Cool Roof Issues

According to the U.S. Department of Energy, over 90 percent of roofs in the United States are dark-colored. Not surprisingly, a black roof has been shown to have a surface temperature of 190 °F, while an identical white roof in the same setting will be just 110 °F. Studies by Lawrence Berkeley National Laboratory and Florida Solar Energy Center show that light-colored "cool roofs" result in up to 40 percent energy savings, generating an estimated annual savings of $750 million in utility bills. A cool roof reflects and emits the sun's heat back to the sky instead of transferring it to the building below. Coolness is defined by two properties — solar reflectance and thermal emittance. The combined ratings of these two properties are calculated into a solar reflectance index (SRI) from 0 to 100. There are currently two national cool roof rating systems: the EPA's Energy Star Reflective Roof Program and the Cool Roof Rating Council's Product Rating Progam.

As mentioned previously, there is a LEED credit for roofing materials with a SRI 29 or greater. Striking a balance between reflectivity and aesthetics is at times a design challenge for architects.

As architects strive to get to an aesthetically pleasing cool roof, coating manufacturers are experimenting with coating tiles to boost reflectivity. Some coatings burn off in a couple of years and the peeling tiles can become a maintenance issue. After a period of time the functionality of the coating can be questionable. The Cool Roof Rating Council is currently conducting studies to determine how much reflectivity various coatings still contain after a three-year period. Concrete roof tile manufacturers are taking another approach of experimenting with tile additives and testing their capabilities as an option for increasing roof tile's reflectivity.

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1. Concrete tile dominates the roofing market in the south because of its:
- ❑ **a.** aesthetic appeal.
- ❑ **b.** lower life cycle cost.
- ❑ **c.** longstanding tradition.
- ❑ **d.** performance in a hot climate.

2. How many basic profiles do concrete tiles come in?
- ❑ **a.** two
- ❑ **b.** six
- ❑ **c.** four
- ❑ **d.** three

3. Multi-color tiles are intentionally manufactured with varying amounts of flashing to:
- ❑ **a.** assure that color permeates the entire tile.
- ❑ **b.** give each tile the same amount of color.
- ❑ **c.** minimize the potential for monotony.
- ❑ **d.** get as uniform a look as possible.

4. Concrete roof tiles:
- ❑ **a.** carry a Class A fire rating.
- ❑ **b.** are combustible.
- ❑ **c.** may cause a fire to spread.
- ❑ **d.** have the second highest fire rating available.

5. Concrete roof tiles generally weigh as much as:
- ❑ **a.** a metal roof.
- ❑ **b.** three layers of asphalt shingles.
- ❑ **c.** a clay roof.
- ❑ **d.** two layers of cedar shingles.

6. Many leading concrete roof tile manufacturers offer:
- ❑ **a.** 100-year warranties.
- ❑ **b.** 50-year warranties.
- ❑ **c.** lifetime warranties.
- ❑ **d.** limited lifetime product warranty.

7. Reflective coatings on concrete roof tiles can:
- ❑ **a.** get cloudy with dirt and debris.
- ❑ **b.** cause the roof tile to break.
- ❑ **c.** burn off.
- ❑ **d.** get washed away.

8. Two areas where impeccable installation is mandatory are:
- ❑ **a.** underlayment and flashings.
- ❑ **b.** flashings and battens.
- ❑ **c.** underlayment and ridges.
- ❑ **d.** field tiles and ridges.

9. According to FEMA in hurricane areas this type of tile installation sustained more damage:
- ❑ **a.** adhesive
- ❑ **b.** nails
- ❑ **c.** mortar
- ❑ **d.** clips

10. The air space between roof deck and tile:
- ❑ **a.** allows rain to seep through the roof.
- ❑ **b.** cools the structure in hot climates.
- ❑ **c.** enables ice dams to build up.
- ❑ **d.** leads to water ponding on the roof.

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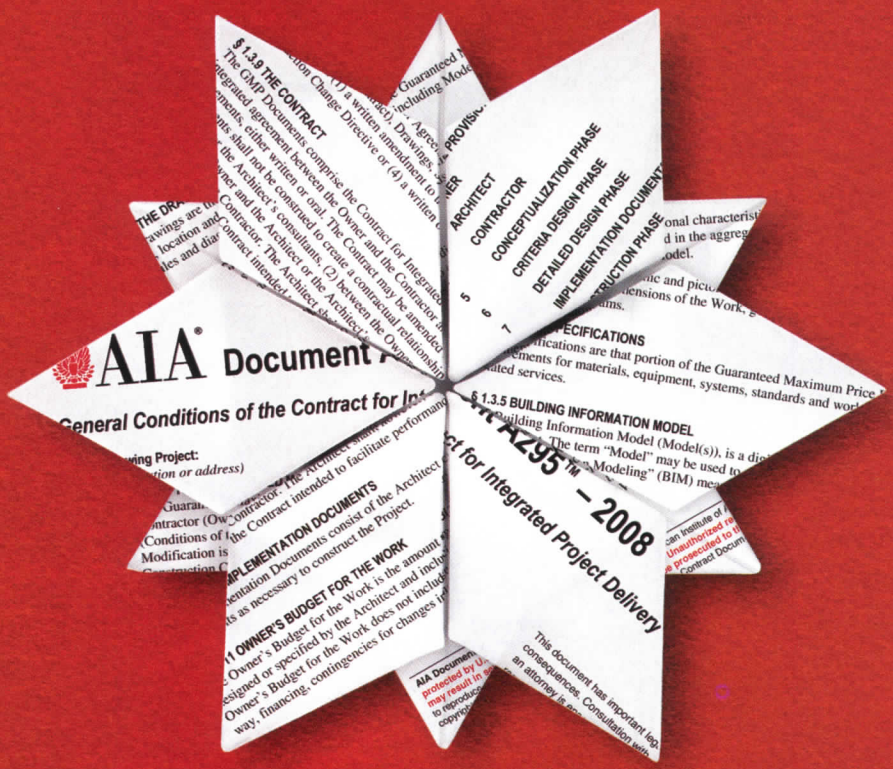

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Hot Water on Demand: Natural Gas Tankless Hot Water Heaters Fit your Energy Budget

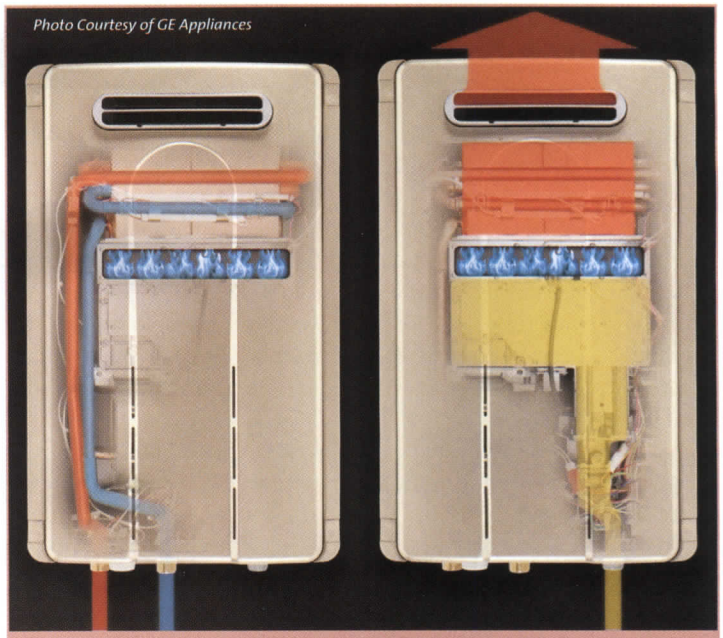
Provided by GE Appliances

By Celeste Novak, AIA, LEED AP

When the water heater and the furnace both failed, green designer John Beeson, LEED AP, of Quinn Evans Architects, convinced his wife to let him try something new. He incorporated a gas-fired, low voltage hot water tankless heater into his solar hot water and radiant floor system, providing his family with continuous hot water for his Ann Arbor, MI residence. He also continues to save money on his monthly energy budget. Designing a 21st century green building can challenge design professionals to rethink the mechanical systems of the 20th century. On-demand technology is a tool often used by businesses to streamline product flow in order to increase efficiency. When products are closer to the source, and when inventory declines at the same rate that it increases, then retailers no longer have to store aging inventory in warehouses. In comparison, the design of a smart building hot water system responds to demand for heating or cooling, without requiring excess storage of hot water to maintain comfort. Hot water on demand is one way to reduce energy costs using a space saving, on-demand technology without storing water, which needs to travel across the length of a building in order to deliver hot water for washing, cooking and heating.

In 2007, on the occasion of its 150th anniversary, the American Institute of Architects challenged its members to find ways to reduce the use of carbon fossil fuels in buildings. The AIA encourages good energy stewardship to preserve natural resources. They recommend that by the year 2030, architects reduce the consumption of fossil fuel by one third of an average energy budget for all buildings. Each component of a building contributes to its energy budget. Recent studies by the U. S. Department of Energy (DOE) revealed that "water heating currently represents up to 17 percent of national residential energy consumption."[1] The water heater by itself, is the second highest single energy user in the home, behind heating. It comes in third only if measured against all the homes appliances and lighting combined. The DOE is implementing new criteria for ENERGY STAR® Water Heaters which they expect will save Americans "$780 million in utility costs, avoid 42 million tons of carbon dioxide emissions, and achieve cumulative energy savings of more than 3.9 billion kilowatt-hours and 270 million therms of natural gas."[2] As of January 1, 2009, five types of residential water heaters will be eligible for the Energy Star label, including gas tankless water heating systems.

This article will review the components of on-demand water heating through tankless water heaters and the criteria which make these systems a good choice for energy and space savings in residential buildings. Understanding the design requirements of tankless hot water heaters to meet the needs of even the largest residential homes will maximize efficiency and reduce maintenance



These images show the operation of gas flow and water flow through a tankless hot water heater, installed inside (left) or outside (right).

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Hot Water on Demand: Natural Gas Tankless Hot Water Heaters Fit your Energy Budget.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 165, then follow the reporting instructions or go to **ce.ArchitecturalRecord.com** and follow the reporting instructions.

Learning Objectives
After reading this article, you should be able to:

- Summarize why tankless hot water heaters maximize energy efficiency in residential buildings.
- Assess proper size of tankless hot water heaters needed to maximize performance by knowledge of local ground water temperatures, as well as the number of bathroom shower heads.
- Discuss proper installation and location for natural gas tankless hot water heaters.

costs. The influence of the temperature of local ground water, the number of bathrooms, and the importance of locating units close to the point of use, are important considerations when specifying tankless hot water heaters in both new and renovated projects.

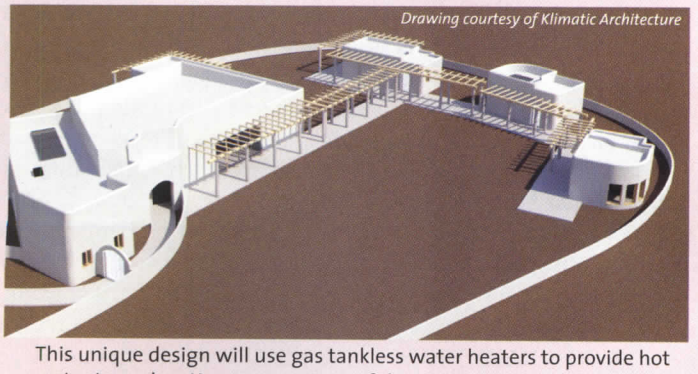
Tankless water heaters have been used for over 40 years in Europe. When architect Fred Thurston, AIA, of Four Front Design *in Rapid City*, South Dakota was designing his own solar home in 1982 he chose a tankless water heater as a backup, a technology he had learned while a student in Holland in 1972. Today, he is installing tankless hot water units as a means to gain credits towards his new LEED® Gold Certified office building.

Hot Water Heating for an Arizona Residence

Tucson architect Susan Schafer Kliman, PhD, AIA of Klimatic Architecture, has a new project on her drawing board which will incorporate tankless hot water heaters combined with an extensive solar panel system. The house will be composed of a series of small cottages which make up the main house, an office and guest suites attached by trellises. Instead of running the plumbing throughout the entire complex, each cottage will have a separate tankless hot water system. The main house will include a combination of solar panels which will preheat hot water which is then used by the tankless heater for the domestic hot water supply.

The house is located in southern Arizona, about 50 miles south of Tucson on a working ranch that has been subdivided into 40 acre parcels. The house has several 'green' features. Exterior walls are constructed of aerated autoclaved concrete (AAC), which is manufactured about 60 miles north of Tucson – and the sand comes from mine tailings which go through a cleaning process. The mechanical system is a radiant system that will handle both the heating and the cooling. The heated water for this system will come from solar panels which will be supplemented with tankless hot water heaters. There are also a lot of passive features designed into the house. The architect has designed a grey water system for the house, and will also be harvesting the rainwater on the site.

Since the guest suites and office are not going to be used for much of the time, the tankless hot water heating system is a very economical and energy efficient way to provide hot water to those areas of the complex.



This unique design will use gas tankless water heaters to provide hot water to each cottage component of this Arizona residence.

The higher cost of a typical tankless hot water system is offset by the energy savings, which are estimated by the DOE to achieve a 30 percent reduction in energy use, per unit.[3] Current legislation may expand the tax credits for energy saving appliances, which will also add to offset the initial purchase cost. One tankless hot water heater can provide more hot water to a home than a typical 75 gallon hot water storage tank. Most units are the size of a large backpack and can be placed in closets, in the attic and even outdoors. The designer can reduce the amount of space needed for mechanical equipment by using a gas tankless hot water heater.

In the past, architects have specified tankless hot water heaters in conjunction with solar panels, and in vacation houses. Today, they can be specified to provide a continuous flow of precisely heated hot water in almost every residential application, as well as for some commercial installations. Some architects are including tankless hot water heaters in every LEED project.

RESIDENTIAL WATER USAGE

Showers, baths, dishwashers, washing machines, toilets, the coffee pot or cappuccino maker: homeowners use water in many ways. Some appliances demand a burst of hot water over a short period of time like a dishwasher or a clothes washer. But the demand for a hot shower is a demand for a continuous flow of water heated to a constant temperature provided as quickly as possible to the user.

Showers demand the most water of any fixture over the longest period of time. Some "whole body" showers provide several shower heads in one shower stall. These systems require an even greater output of hot water. Designers need to understand the water use of a facility and consider all of the appliances which may be used by the occupants. Many green designers specify fixtures, which will have low flow water systems to preserve water usage, but these will not affect the supply of hot water from the tankless hot water heaters. When designing a hot water system, the designer considers the flow rate of all of the plumbing fixtures primarily based on the flow rate for each bathroom. When designing a tankless hot water heater the designer should consider the following:

- Is the fuel source natural gas or liquid propane?
- How many full baths?
- Are there specialty bath fixtures such as a hot tub or a body shower?
- What is the average ground water temperature in the winter?
- Will the unit be located indoors or outdoors?

With proper sizing, tankless hot water heaters can provide on demand hot water, for all users in a residence, even when multiple showers, sinks, and appliances are all in use at the same time.

ENERGY CONSUMPTION

The DOE ENERGY STAR® rating will apply to natural gas or liquid propane tankless hot water heaters. Sizing the gas service is critical to proper installations. A gas line into a residential home should be sized to provide gas for the entire gas load of a home, calculated by adding the BTU rating of each gas appliance in the home. State and local codes must be met, as well as utility requirements, to

ensure gas supply to the unit is adequate to meet the rated demands. Tankless hot water heaters may require a gas service which ranges from 180,000 BTU's to 199,000 BTU's. This may require that the professional will specify a larger gas service into the home than normally provided.

The DOE estimates that these units will be expected to reduce energy use by approximately 30 percent and save the home owner approximately $108 in annual energy costs in comparison to a typical gas storage water heater.

Tankless gas hot water heaters, unlike traditional electric water heaters, or electric tankless hot water heaters only need 120 VAC, 60Hz power from a properly grounded circuit, which simplifies installations in most homes. The electric service must be grounded in accordance to local codes or to the most recent edition of the National Electrical Code, ANSI/NFPA 70. Do not rely on the gas or water piping to ground a tankless water heater. Low voltage power supply requirements make these units ideal for replacement hot water heating systems in existing homes.

Electric digital controls display the set temperature and allows for diagnostic maintenance if required. The heating system only activates when the hot water tap is opened and closed when the tap is closed. If a hot water faucet is dripping, the heater will not sense a demand for hot water unless the flow rate can be detected at a rate over .6/gallons/minute. The temperature setting is precise to the exact amount of hot water needed at the appliance or shower head and does not have to compensate to heat replacement water as part of a storage system. Remote controllers are available to adjust temperature or provide diagnostic codes as needed for indoor installations.

In order to meet the new ENERGY STAR® label, a whole-home tankless water heater must have a minimum energy efficiency rating (EF) of 0.82, minimum gallons-per-minute flow (GPM), of 2.5 at a 77 °F rise, or be 41.4 percent more efficient than the current Federal standard.[4] The DOE estimates that these units will be expected to reduce energy use by approximately 30 percent and save the home owner approximately $108 in annual energy costs in comparison to a typical gas storage water heater.

An energy factor (EF) indicates a water heater's overall energy efficiency based on the amount of hot water produced per unit of fuel consumed over a typical day. This rating evaluates the following:

- "Recovery efficiency — how efficiently the heat from the energy source is transferred to the water
- Standby losses — the percentage of heat loss per hour from the stored water compared to the heat content of the water (water heaters with storage tanks)
- Cycling losses — the loss of heat as the water circulates through a water heater tank, and/or inlet and outlet pipes."[5]

Manufacturers provide this information in their product literature and can discuss with the designer how to specify the right system which will provide the highest energy rating for a home installation. Higher efficiencies of other types of hot water systems do not necessarily mean that they provide equal energy savings as the gas tankless hot water heater is only used when there is a demand for hot water.

GROUND WATER TEMPERATURE AND HIGHER DEMAND TEMPERATURES

Architects who design sustainable buildings know that climate and environment can strongly influence design decisions. This is true for specifying tankless hot water systems. These units heat water from the local water source to a required hot water temperature and the difference between these temperatures influences the size of a unit specified by the design professional. The average ground water temperature varies by climate. Colder climates have colder ground water than a warmer climate. The U.S. Geological Survey publishes ground water temperature data and most manufacturers will provide online or phone support to assist the architect or builder who will need to know the ground water temperature of the building site, before choosing the right tankless hot water heater.

Find the right tankless water heater for any size home.

	Average Groundwater Temperatures					
	40 °F		55 °F		70 °F	
No. of bathrooms	No. of units	Base model GPM required	No. of units	Base model GPM required	No. of units	Base model GPM required
1-1.5 bathrooms	1	7.5	1	7.5	1	7.5
2-2.5 bathrooms	1	7.5	1	7.5	1	7.5
3-3.5 bathrooms	1	9.4	1	7.5	1	7.5
4-4.5 bathrooms	2	7.5	1	7.5	1	9.4

Actual usage conditions may require the next size unit or multiple units to meet demand. Colder ground water temperatures or higher set point temperatures may require higher gallons per minute (gpm) capacity or multiple units to properly meet household hot water requirements.
Courtesy of GE Appliances

If there are multiple demand fixtures in a residence and if a higher set point temperature is desired, the design will also require more GPM capacity to properly meet household hot water requirements. The common residential temperature average set point is 120 °F. Tankless hot water heaters are the most efficient when there is no greater than 30 degrees differential required for heating water.

Manufacturers will assist the designer with determining the right tankless gas water heater for the project, climate, and design temperature as shown in the chart below.

CASCADING DEMAND

The most common concern by users is whether the volume of water can meet the demand, and if the home user will have enough flow for

This whole house unit is mounted on an exterior wall and landscaping should be designed to shield the view of the unit, while providing adequate clearance for maintenance.

simultaneous hot water needs such as showers, laundry or running the dishwasher. A typical showerhead uses about 2.5 gallons per minute of total water, hot and cold mixed. Depending on the time of year, the mix could be 50 percent hot and 50 percent cold, making the hot water need about 1.25-1.5 GPM for each shower. This means a home with three showers could need about 3.75-4.75 gallons per minute of hot water, if all showers are used simultaneously. Proper sizing of a tankless heater will match the GPM to the flow rate and the ground water temperature and account for even large temperature differences of as much as 77 degrees.

By sizing the tankless hot water heater by the number of shower heads and the number of bathrooms, a tankless hot water heater provides a continuous flow of water to as many fixtures, appliances and shower heads as required. Units are designed in tandem to cascade and fire additional heating burners as designed by the professional for each project type. When the unit senses a water flow of about ½ gallon, burners in the first demand sequence fire to provide hot water, engaging only a portion of the 180,000 BTU's available for heating. A continuous supply of hot water is available to the homeowner as they turn on the dishwasher, start the laundry, or use additional showers, engaging additional burners to heat the additional demand for hot water. Units can also be clustered to fire even more heating burners as needed for larger homes or commercial installations.

VENTILATION

Tankless gas water heaters come in two types. Outdoor models can be hung directly on the outside of a house and self vented with no additional ventilation required. Indoor models require venting and placement adjacent to an exterior wall. Venting must be 36 inches above grade and use the manufacturer's specified pipe. Many utilize direct vent, concentric pipe so only one vent hole is needed. Exhaust gases pass through the center of the pipe while the air needed for combustion is pulled in from the outer ring. This method does not require the use of "*make up*" air from the homes ventilation system.

Venting should be as direct as possible and for maximum efficiency, ventilation runs should be no longer than 21continuous feet. Each elbow reduces the length of the ventilation piping. For example, a 90 degree elbow equals six feet of ventilation run and a 45 degree elbow equals three feet of ventilation run. Ventilation piping can go as long as 41 feet but will longer runs will lessen the efficiency of the heater.

Designers should consider the following intake/exhaust guidelines for ventilation:

- Do not combine vent components from different manufacturers' since the tankless hot water heater is certified and listed with the vent system.
- The vent system must vent directly to the outside of the building and use outside air for combustion.
- Every vent connection must be accessible for inspection, cleaning and replacement.
- Support horizontal vent runs every four feet and support all vertical vent runs every six feet or in accordance to local codes.
- Do not reduce the vent diameter.
- Venting should be as direct as possible avoiding long runs and a minimum number of pipe fittings.
- Do not connect the venting system with an existing vent or chimney or any other vent pipe of other appliances or water heaters.
- Provide an inlet screen to minimize blockage from debris.

Installed in an unheated attic space, the professional will include an automatic emergency drain valve in case of power failures.

Celeste Novak, AIA, LEED AP, is a principal at RizzoloBrown + Novak in Ann Arbor, Michigan and author of articles focusing on sustainable building materials and products.

Continues at ce.ArchitecturalRecord.com.

See Quiz on the Next Page

or

Take the Quiz Free Online

To receive AIA/CES credit, you are required to read the entire article and pass the test. Go to **ce.ArchitecturalRecord.com** for complete text and to take the test. The quiz questions below include information from this online reading.

Program title: **"Hot Water on Demand: Natural Gas Tankless Hot Water Heaters Fit your Energy Budget" (09/08, page 161).** AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit. (Valid for credit through September 2010). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. Ground water temperature:
- ❑ **a.** is not important.
- ❑ **b.** is colder in Georgia than in Michigan.
- ❑ **c.** is the same for any installation.
- ❑ **d.** determines the size and capacity of a tankless hot water heater.

2. Recommendations for Intake exhaust guidelines for ventilation do not include:
- ❑ **a.** using vent components from the same manufacturer.
- ❑ **b.** installation for easy maintenance.
- ❑ **c.** the avoidance of long ventilation runs.
- ❑ **d.** venting through an existing chimney.

3. Indoor tankless gas hot water heaters require:
- ❑ **a.** a larger electrical circuit.
- ❑ **b.** direct venting to the outdoors.
- ❑ **c.** an emergency drain valve.
- ❑ **d.** a large installation area.

4. Which appliance is the second highest single energy user in a home?
- ❑ **a.** Hot water heaters
- ❑ **b.** Air conditioners
- ❑ **c.** Refrigerators
- ❑ **d.** A furnace

5. A tankless hot water heater is sized by:
- ❑ **a.** the number of kitchen appliances.
- ❑ **b.** the number of bathrooms and shower heads.
- ❑ **c.** the size of the building.
- ❑ **d.** the location of the bathrooms.

6. A recommended temperature for laundry and dishwashing is:
- ❑ **a.** 160 °F to 180 °F
- ❑ **b.** 140 °F to 160 °F
- ❑ **c.** 120 °F to 140 °F
- ❑ **d.** 100 °F to 120 °F

7. Hard water above 11 grains per gallon:
- ❑ **a.** will not change the warranty period of a tankless hot water heater.
- ❑ **b.** will not reduce the efficiency of the unit.
- ❑ **c.** will require the use of a water softener.
- ❑ **d.** will require an outdoor installation.

8. The time it takes to deliver hot water to a fixture can be reduced by:
- ❑ **a.** reducing the number of appliances.
- ❑ **b.** placing the units close to an outside wall.
- ❑ **c.** raising the set temperature of the units.
- ❑ **d.** locating a unit close to the fixture.

9. When the tankless hot water heater is integrated with a solar hot water heater:
- ❑ **a.** separate ventilation stacks are required.
- ❑ **b.** the preheating of the water by the sun reduces the differential of the temperature setting and increases the design efficiency of the unit.
- ❑ **c.** the unit takes time to record the temperature setting before it can heat the water.
- ❑ **d.** the unit must be placed outdoors near the solar panel.

10. A typical 75-gallon hot water storage tank is equal to the supply provided by how many tankless hot water heaters?
- ❑ **a.** One
- ❑ **b.** Two
- ❑ **c.** Three
- ❑ **d.** Four

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[1,2,3,4] http://www.doe.gov/news/6134.htm., July 22, 2008
[5] http://www.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=12820

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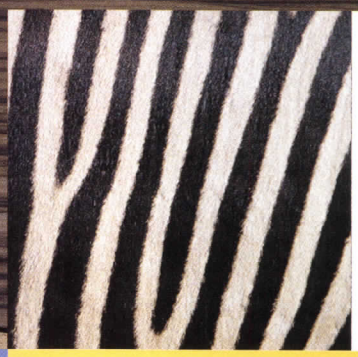

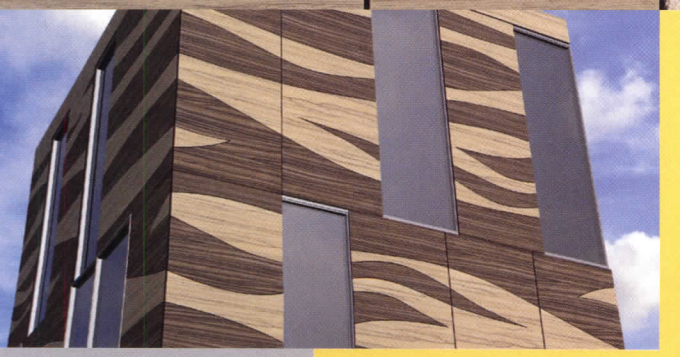

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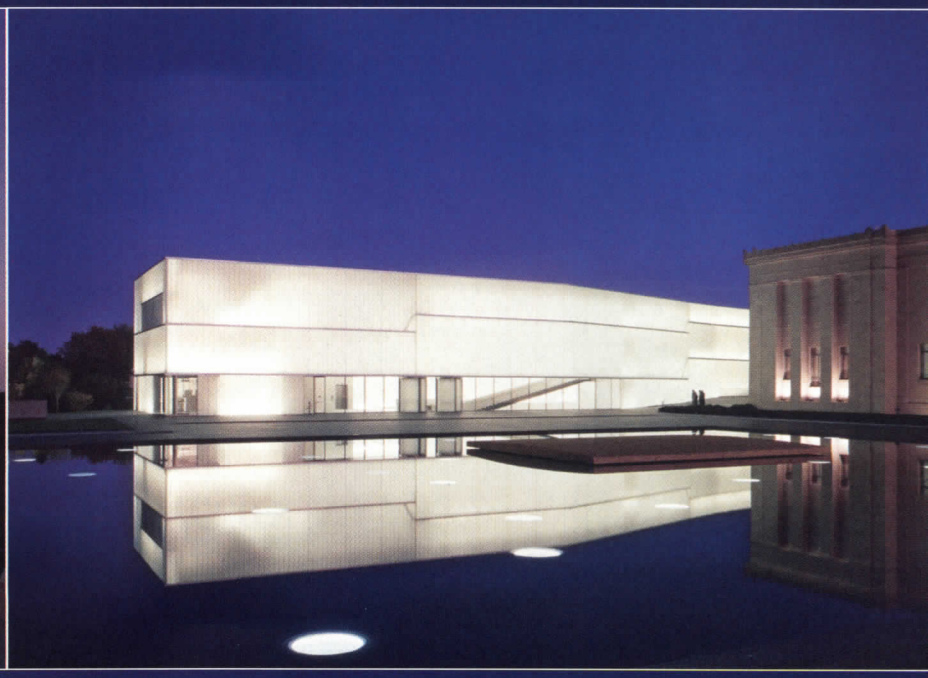

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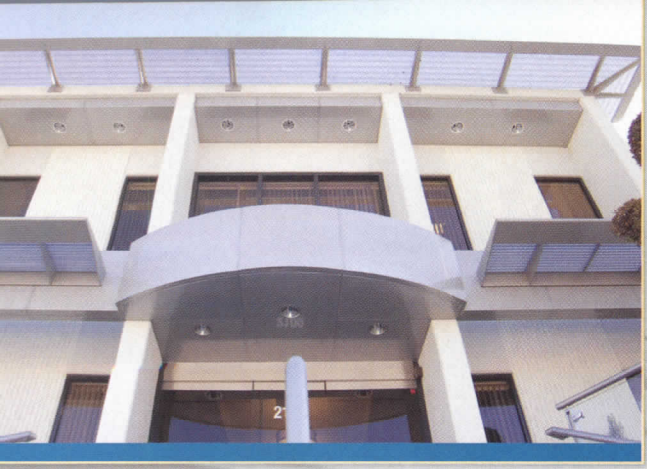

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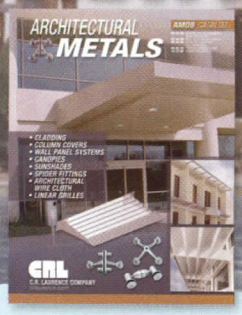

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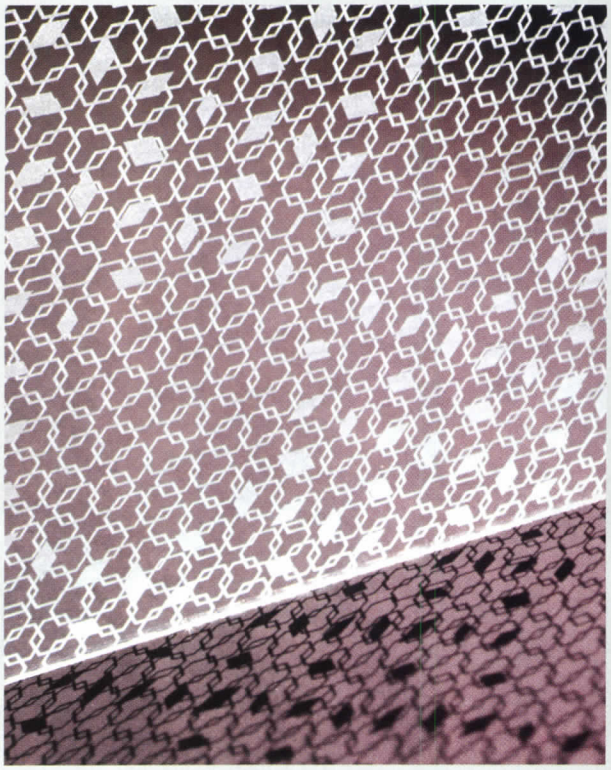
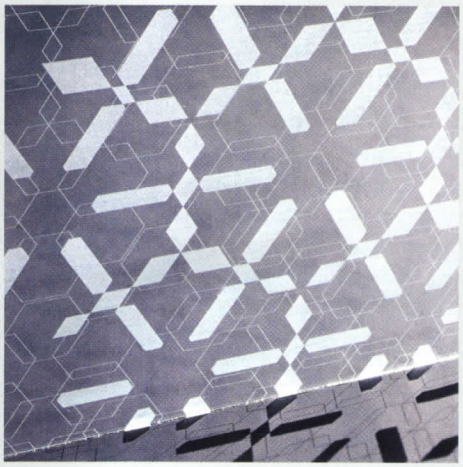




The Unity series (near and far left), with patterns that can be etched, cast, or colored with a silk screen, is ideal for applications as varied as boardroom walls, partitions, and architectural facades. Transition (center) puts both transparency and texture on the same glass panel, and can be used with almost any Joel Berman pattern.

Three new designs reveal the reflective, innovative style of Joel Berman Glass Studios

For more than 25 years, Joel Berman Glass Studios, a producer of high-quality kiln-cast and pressure-formed glass, has prided itself in its unrelenting aspiration to push the boundaries of this versatile material, both conceptually and technically. Introduced at NeoCon, the company's latest offerings – Unity, Transition, and Bastoni – do not disappoint, demonstrating the company's objective in its notably diverse array of styles.

The studio, comprising a cultural montage of team members, has recently opened a dialogue for a new design philosophy that embraces diversity and advocates unity. Spearheaded by glass artist Joel Berman, founder and president, it's called *Design Without Borders*. Inherent in its concept is the desire to speak to an ever-confined world, using the universal language of design as a cohesive force. The Unity series, its first manifestation, has a unique pattern and symmetry drawn from the contemplative art of Islam, which itself represents a conglomeration of cultural elements.

"We used the most simple geometric shape that occurs in Islamic art, the hexagon, to extrapolate an algorithm. By distilling it down to its basic design element, we gave a brand-new feeling to an age-old motif," says Saleem Khattak, design manager. By overlaying the patterns at different scales, the glass reads as a supergraphic from a distance. But close proximity reveals the intricacy of each layer, creating an ordered yet nonrhythmic look.

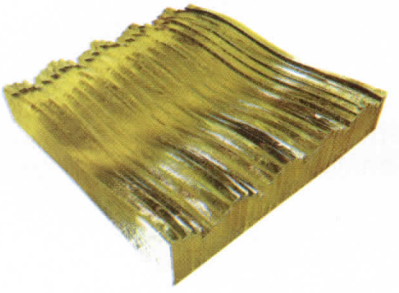
Equally exciting in its optical innovation, Transition is the result of a pioneering technique in glass casting. It allows a single panel of glass to transition from an embossed textured surface to a smooth, transparent one – a process that was previously thought impossible. "We literally traveled around the world to look for the answer but had no luck," says Berman. "In the end, it was our own team that figured it out."

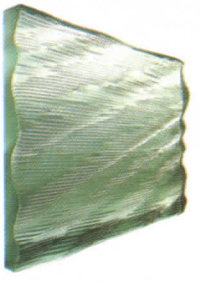
Ideal for health-care and office facilities, this smooth progression from textured to clear glass offers a partially obscured view for privacy, as well as a transparent one for full view, without an awkward break.

Berman's third new collection, Bastoni (not shown), is a dynamic and textural kiln-cast glass that mimics a random arrangement of falling sticks. Lively and active, the deeply embossed surface has the ability to create energy in flat-glass applications as varied as doors, decorative walls, partitions, and water features.

As for inspiration, Berman explains, "It's a sum total of who we are that results in what our products look like." Joel Berman Glass Studios, Vancouver, Canada. www.jbermanglass.com **CIRCLE 213**

For more information, circle item numbers on Reader Service Card or go to ***architecturalrecord.com/products/***.



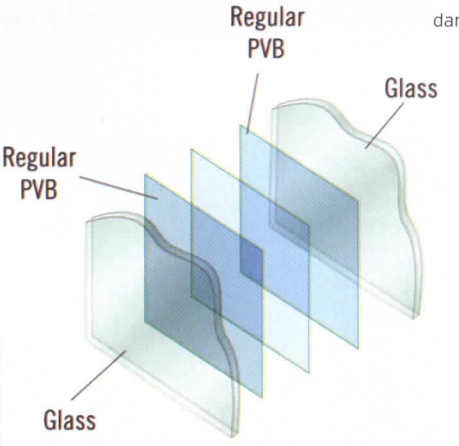


► Stack it up

Named for the technique in which it's made, the Stax Series by Nathan Allan Glass Studios offers an ingenious way to create feature walls over large surfaces. Slates of *glass are* stacked and then fused together to generate richly textured solid sheets in sizes as large as 5' x 9' x 1" to 1½" thick. The clear glass comes in several distinct patterns and colors, and can be further enhanced by an optional mirror backing. Nathan Allan Glass Studios, Richmond, B.C. Canada www.nathanallan.com **CIRCLE 214**

▼ Safe and soundless

The result of an advanced acoustical interlayer system, SilentGlass Technology has the ability to disseminate sound waves created by typically obtrusive noises such as barking dogs, honking horns, amplified music, and roaring airplanes. It transforms sound into heat energy to dampen up to 50 percent of noise within the 1,000 to 3,000 Hz range. Additionally, the tough interlayer adds considerable protection from forced entry. Solutia, St. Louis, Mo. www.saflex.com **CIRCLE 215**



◄ Smooth as satin

Pristine and classic, SatinDeco is an acid-etched glass with a silky finish that resists stains and fingerprints. An ideal surface solution for offices, hotels, and shops, it is offered in four different varieties: Satin Deco, SatinDeco Low Iron for increased light transmission, SatinDeco Lami for safety and sound control, and SatinDeco mirrors for a translucent mirror finish. Guardian, Auburn Mills, Mich. ww.guardian.com **CIRCLE 216**

◄ A sweet glaze

Designed to be an alternative to glass block, the Technical Glass Products (TPG) Pilkington Profilit glazing system offers a unique, cost-efficient glass cladding system that obscures vision but allows light to pass through. Self-supporting U-shaped glass channels create an aesthetic rhythm within an extruded metal frame. The system comes in a variety of colors and degrees of translucency with an overall span of 23 feet. Technical Glass Products, Federal Way, Wash. www.tgpamerica.com **CIRCLE 217**

▼ Cool clarity

The largest flat-glass manufacturer in North America, PPG Industries, has set a new standard for ultra-clear glass with the introduction of Solarban 60 Starphire, which combines exceptional clarity and high-energy performance. Using one of the industry's most effective solar control coatings, this specialty glass is ideal for skylights, entries, spandrels, and even such large-scale projects as Robert Stern's Comcast building in Philadelphia (below). PPG Industries, Pittsburgh, Penn. www.ppgglazing.com **CIRCLE 218**

◄ Bonding time

The design and fabrication of glass furniture has now gotten neater and easier with Hafele America's new UV Glass Bonding. This state-of-the-art UV adhesive glue bond can bind glass to glass, stainless steel, granite, or wood without the need for drilling or applying support profiles. The process is simple (clean the surface, heat it with a hot air-blower, and apply adhesive), but the result is elegant and professional. Hafele America, Archdale, N.C. www.hafele.com **CIRCLE 219**

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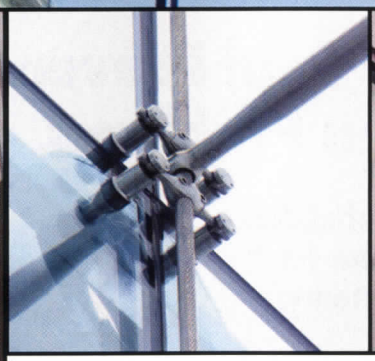
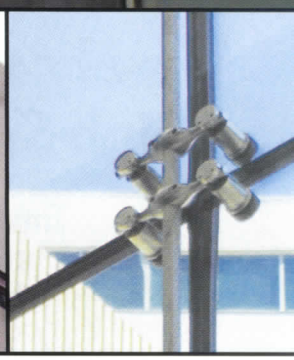
Pilkington **Planar**™

Cable Net Wall System

Centre Square, Philadelphia, PA
Architect: Daroff Design Inc.





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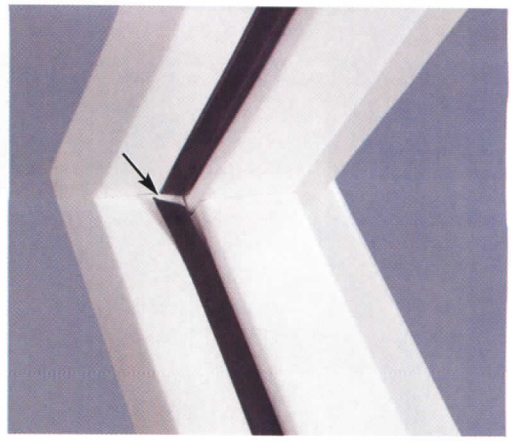
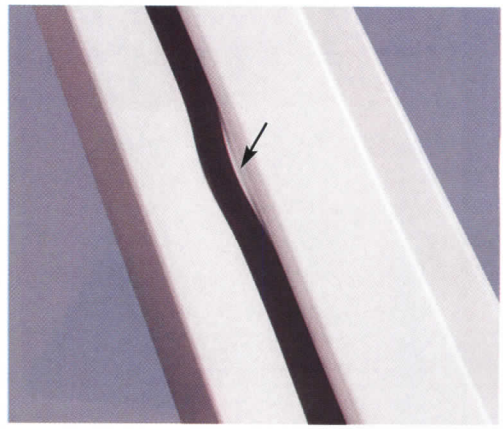
CIRCLE 73



Job-site Installation Problem #1
Failure to thoroughly clean surface of frame leads to poor adhesion of stick on door seal which causes it to separate from the frame. With Timely, you avoid call-backs.



Job-site Installation Problem #2
Poor alignment of the door seal can lead to inadequate performance. Again, with Timely, you avoid call-backs.

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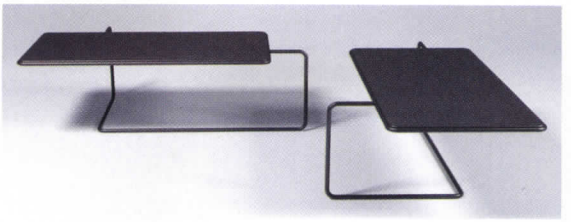
CIRCLE 74

Product Briefs ICFF

Typically following Milan's supersize furniture fair, the launches at N.Y.C.'s smaller **International Contemporary Furniture Fair** can echo the Italians. This year's more eclectic mix of furnishings and materials, however, was more likely to be touted as **green**. *David Sokol*



▲► **The style council** The San Francisco-based Council, launched in 2007 invites various talents to submit designs for consideration and chooses its collection from the resulting entries. For its second year, Council plucked concepts from Cédric Ragot, whose Stabil nesting tables (top right) feature a powder-coated-steel tabletop cantilevered seemingly precariously from a string-thin, asymmetrical base. The One & Co-designed Periodic Table (top left), a block of reclaimed fir beams sprayed in pure silver, is a first-ever technique that required a year of research to produce. Council, San Francisco. www.councildesign.com CIRCLE 220

▲ **Tree people** Wallpaper manufacturer Graham & Brown invited students from London's Central St. Martins to contribute designs for a new series printed in water-based ink on paper from managed timber sources, and shipped in compostable corn-based packaging. Of 22 proposals, the company chose to produce five Eco-Wallpaper designs, featuring patterns of birds, futuristic cars, tropical flora, concentric circles, and birdcages. Graham & Brown, Blackburn, United Kingdom. www.grahambrown.com CIRCLE 222

► **Wily wires** Marking a push into the residential market, Herman Miller unveiled its Lifework Portfolio of furniture designed for home offices. The introduction includes Airia, by Rhode Island-based designers Ayako Takase and Cutter Hutton of Kaiju Studio. The mixed-material desk features insightful details, such as a walnut lip that is curved where the forearms rest on the tabletop, and three covelike channels – as sensual as they are inconspicuous – for wire management. Herman Miller, Zeeland, Mich. www.hermanmiller.com CIRCLE 221

◄ **Convertible kitchen** Bulthaup's new b2 kitchen system resembles old-fashioned workshops that contain only a few freestanding, mobile elements. A workbench hosts cooking and plumbing equipment, and a series of monolithic oak or walnut cabinets – Modernist versions of a *kas* (ornate Dutch movable closet or cabinet) – open up to contain layers of storage for tools, dry goods, and appliances. Bulthaup, Bodenkirchen, Germany. *www.bulthaup.com* CIRCLE 223

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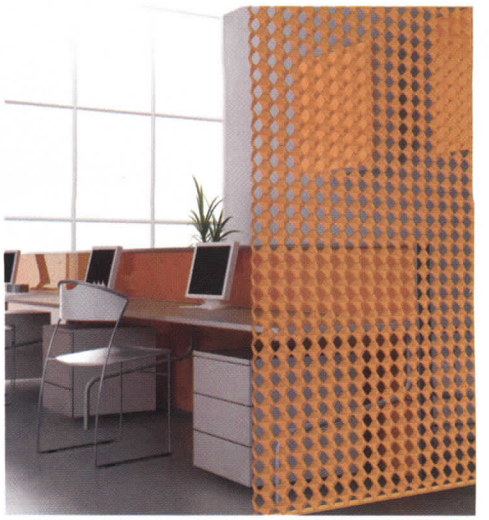
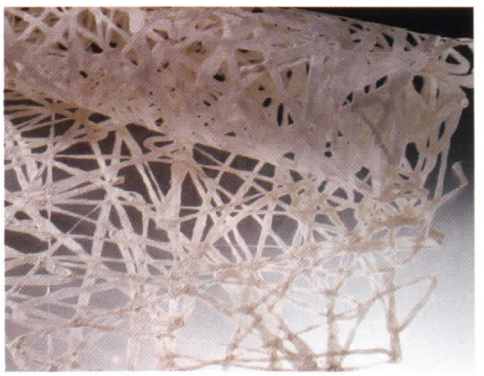
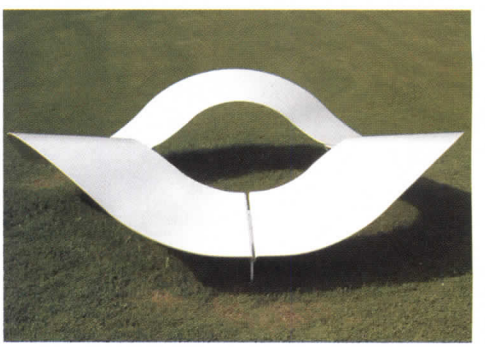


► **Textural textile** Like a paper wedding bell, Parametre expands from a 2" strip into a three-dimensional, rhythmically incised screen measuring as much as 14' x 16'. Made by ecoresin manufacturer 3form, Parametre is made entirely of nonwoven polyester with a 10 percent recycled content. The light-diffusing partitions can be hung vertically or horizontally in a variety of indoor and outdoor applications. Parametre by 3form, Salt Lake City. www.parametre.us CIRCLE 224



◄ **Screen gems** Handcrafted Japanese parchment, or *washi*, is an art with architectural ambitions. The company Precious Pieces, the only distributor of *washi* in the United States, collaborates with a studio to supply single-sheet parchments as large as 300 square feet in dynamic designs, such as Kumo (left), for applications ranging from doors, screens, and lamp shades. Precious Pieces, New York. www.precious-piece.com CIRCLE 225

► **Ready for takeoff** The wavy steel modules of Ondine, designed by Michaël Bihain and architect Cédric Callewaert, appear like abstracted birds on the verge of flight. Connect three of these components instead to produce a circular bench whose undulations support sitters of different heights. Michaël Bihain, Brussels. www.bihain.com CIRCLE 226



▲ **Wet-suited** The layered, looping forms of Son of a Bench impart this sturdy perch with a fast, Blade Runner look. Clad in rubber, the futuristic style is multifunctional, too. Besides using the bench in outdoor settings or in lobbies regularly exposed to the elements, Son's multiple slots are perfectly sized for standing up wet umbrellas. Blu Dot, Minneapolis. www.bludot.com CIRCLE 227

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Berman

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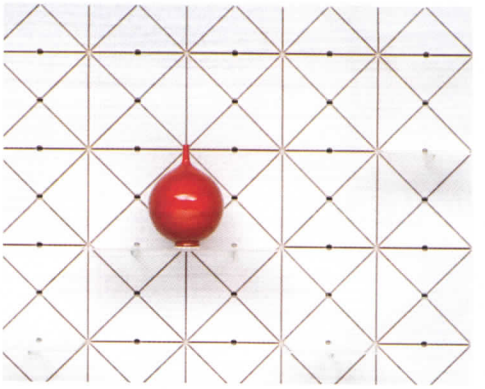
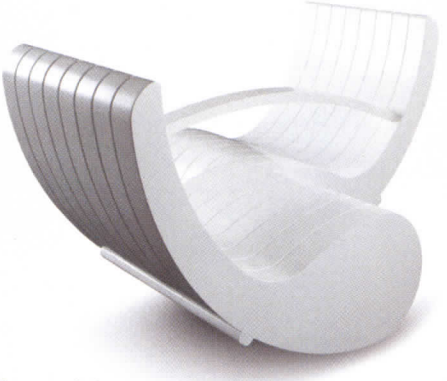
Products ICFF

► **Crystal drawers** When the push-touch doors of Brave Space Design's Planar Storage pieces are closed, they resemble walls of crystalline facets – although the series is fabricated of bamboo, recycled MDF, and FSC-certified maple. Brave Space Design, Brooklyn. www.bravespacedesign.com **CIRCLE 228**

◄ **Lunch in a crunch** No time to dine in the employee cafeteria? Roll up a stainless-steel trolly and mobile Teppan Yaki grill to this German kitchen furniture manufacturer's Dining Desk. This conference table-size hybrid expands manually or by motor to reveal an open center that can accept the stainless-steel panels, cutlery tray, or chopping board needed to pull off an Alice Waters-style working lunch. Poggenpohl, Herford, Germany. www.poggenpohl-usa.com **CIRCLE 229**

► **Shelf life** The routed, gridded crisscross pattern of Taapa accepts shelves configured according to desired capacity or taste. The wall-mounted unit is designed by the New Zealand company Hold and made of native, knot-free Clearwood, which is said to be four times stronger than MDF. Essenze, Austin. www.essenze.co.nz **CIRCLE 230**





◄ **Rockabye buddies** A pair of three-dimensional semicolons face one another to form architect-turned-furniture designer Laurie Beckerman's Tete-a-Tete Rocker. Joined at the hip and by an arcing armrest, the linked Corian shapes rock in unison with two participants seated. Laurie Beckerman Design, New York. www.lauriebeckerman.com **CIRCLE 231**

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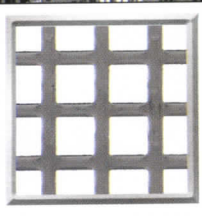
The Hole Choice



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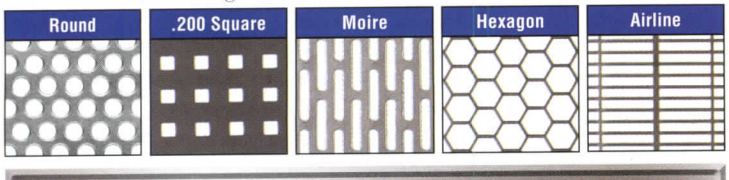

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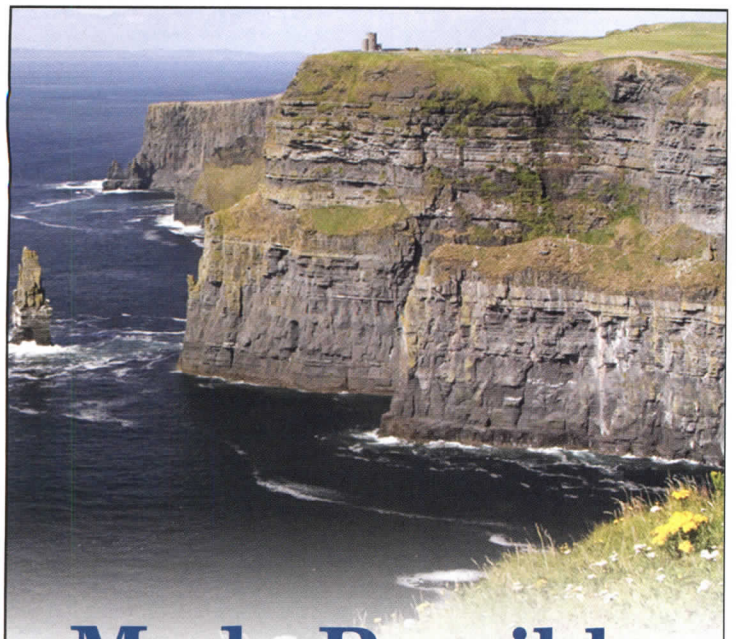

Made Possible by Bilco

Visited by nearly 1 million tourists each year, Ireland's Cliffs of Moher are one of the most beautiful sights in the world. Constructed in a hillside approaching the cliffs, you will find the award-winning visitor's center. This eco-friendly building was built into the terrain and covered by grassed hills to minimize the visual impact on this breath-taking environment.

Concealing this massive center was quite a challenge, but designing a fire ventilation system for this structure and maintaining its aesthetics became equally daunting.

While we obviously can't take credit for the beauty of this Irish countryside, we did play an important role in the design of the visitor center. Bilco worked with the architects on this project to design a custom fire vent to solve this design problem and to ensure the safety of the center and its occupants.

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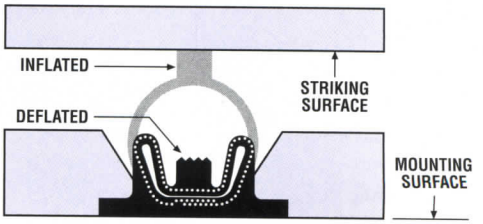
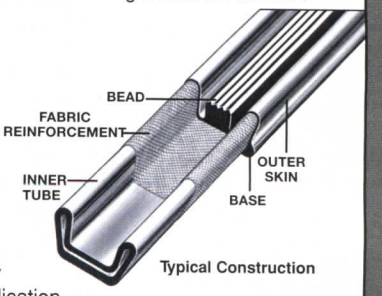


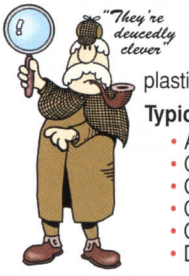
A Seal Master inflatable seal is an elastomeric tube which can be molded in a concave, convoluted or flat configuration. It can be used anywhere a positive seal is needed between opposing surfaces to fill uneven or irregular voids. Air is the most common inflation medium. Liquids may also be used. When the inflation medium is removed the seal retracts to its deflated or "memorized" configuration allowing clearance for movement of one or both surfaces.

These are not simple rubber extrusions . Fabric reinforcement and full molding ensure maximum performance for long-term, inflating/deflating operation. They are molded to function in different planes; radially in, radially out, axially and combinations thereof, conforming to many different contours. They are made in strips with closed ends or in continuous loops to fit your application.



Typical Construction

For maximum strength, durability and shape retention Seal Master will recommend an appropriate fabric reinforcement. Choice of elastomer will depend on special environmental and operational requirements.



Accessory products include metal, rubber and plastic retainers, fasteners and inflation control devices.

Typical Applications:

- Actuators
- Chambers
- Clamps
- Clean Rooms
- Cushions
- Domes
- Doors
- Flood Control
- Gates
- Grippers
- Hangars
- Hatches
- Laminators
- Lifters
- Roofs
- Shafts
- Windows
- Wipers

These inflatable seals offer innovative ways to overcome these troublesome sealing problems:

- Weather
- Chemicals
- Pressure/Vacuum
- Heat/Cold
- Noise
- Radiation
- Liquids
- Contaminants
- Light/Dark

Seal Master has produced over 6,500 different sealing products in a variety of configurations. All custom designed and fabricated.

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CIRCLE 83

Dates & Events

New and Upcoming Exhibitions

Eero Saarinen: Shaping the Future
Minneapolis
September 14, 2008–January 4, 2009
In this collaborative presentation, the Walker Art Center will feature Eero Saarinen's furnishings and residences, as well as his designs for churches and academic and corporate campuses. It will also present his designs for airports, memorials, and embassies and his early work within the context of the museum's Modernist design collection. At the Minneapolis Institute of Arts. Call 612/870-3131 or visit www.artsmia.org.

Ongoing Exhibitions

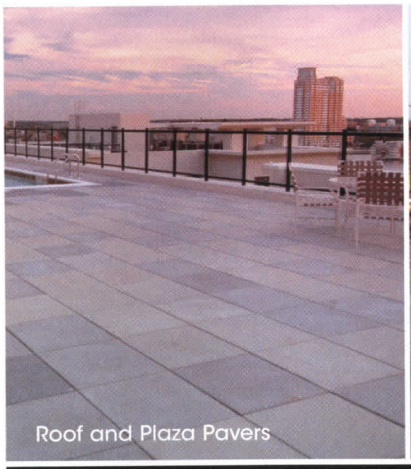
Home Delivery: Fabricating the Modern Dwelling
New York City
Through October 20, 2008
Comprising a survey of the past, present, and future of the prefabricated home, this exhibition places equal emphasis on the process of architectural design and production and its actual end result. On the sixth floor, 84 architectural works spanning 180 years are represented through films, architectural models, original drawings and blueprints, and other materials. In the 54th Street lot adjacent to the museum, visitors can explore five prefabricated homes specially commissioned for the exhibition and assembled on site. At the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Lectures, Conferences, and Symposia

The Design Build Architect Conference
Boston, Chicago, Atlanta, and Miami
September 6, 2008; October 11, 2008; January 17, 2009; and March 28, 2009
The Design Build Architect Conference is a program developed for architects by architects. The conference strives to motivate design professionals to achieve greater degrees of success through the addition of deliverables. Incorporating "build" services into an existing design practice has the potential to better serve the client, fortify the practice, and revitalize the role of architect. At Harvard University, Northwestern University, Georgia State University, and Florida International University. For more information, visit www.TheDesignBuildArchitect.com.

Lecture: Modernizing Mies at 860-880 When Less is Not Enough
Chicago
September 10, 2008
Lecture by Rico Cedro, AIA, and Gunny Harboe, AIA. At the Chicago Architecture Foundation. Call 312/922-3432 or visit www.architecture.org.

Schools for a Flat World
Helsinki, Finland
September 11–13, 2008
This conference, presented by the AIA Committee on Architecture for Education, will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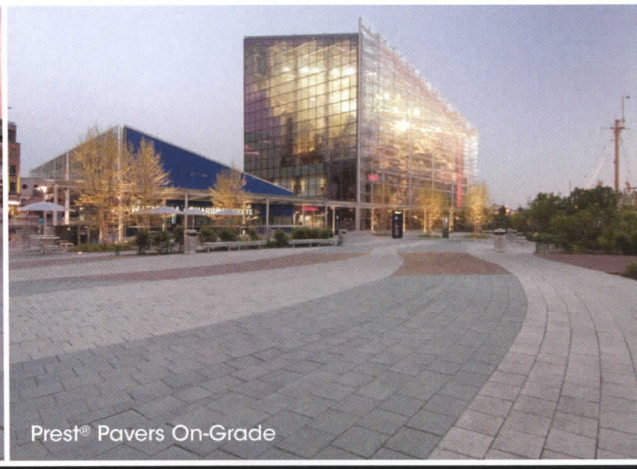
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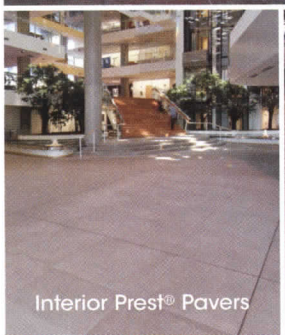
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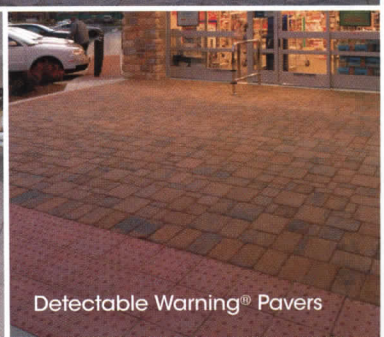
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CIRCLE 85

Dates & Events

explore how school designers can better respond to the global market. Visit www.aia.org/cae.

Buckminster Fuller Symposium
New York City
September 12-13, 2008
In conjunction with the exhibition Buckminster Fuller: Starting with the Universe, on view at the Whitney Museum of American Art through September 21. Visionary designer, philosopher, poet, inventor, engineer, and advocate of sustainability, Fuller was one of the great trans-disciplinary thinkers of the last century with a legacy that extends to nearly every field of the arts and sciences. This symposium takes its cue from Fuller's dictum, "I always say to myself, what is the most important thing we can think about at this extraordinary moment," and explores the ways contemporary scholars and practitioners are pushing Fuller's ideas and projects into the 21st century. At the Cooper Union, the Great Hall. Call 212/353-4195 or visit www.cooper.edu.

Promosedia 2008:
The 32nd International Chair Exhibition
Udine Fiero, Italy
September 13-16, 2008
Open to the trade only, the 32nd International Chair Exhibition will bring interior designers, architects, buyers, importers, wholesalers, retailers, and journalists from over 70 countries. At the Udine show grounds.
Visit www.promosedia.it.

Integrated Project Delivery
San Francisco
September 23 and October 22, 2008
This series continues to examine the different facets of Integrated Project Delivery, highlighting how architects can be leaders during project delivery. At AIA San Francisco. Visit www.aiasf.org.

American Society of Landscape Architects (ASLA) 2008 Annual Meeting and EXPO
Philadelphia
October 3-7, 2008
Featuring the world's leading experts in landscape architecture, the meeting includes more than 120 sessions and 450 exhibitors. Connect with authorities leading the next generation of sustainable design and find out how the landscape architecture profession melds environmental, social, and economic health through green infrastructure. At the Pennsylvania Convention Center. Visit www.asla.org.

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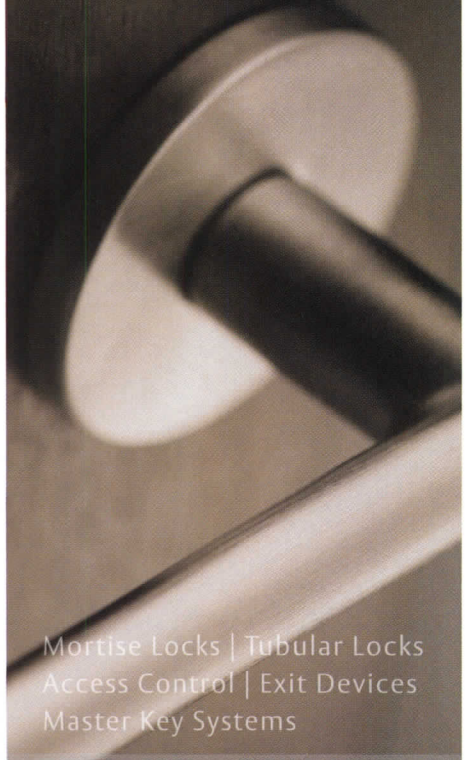

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CIRCLE 87

Dates & Events

The Net-Zero Energy Buildings Conference
New York
October 7-8, 2008
ARCHITECTURAL RECORD's 2008 Innovation Conference will cover all aspects of the design of net-zero energy buildings, including several compelling case studies. MIT professor Daniel Nocera is the keynote speaker, and Christoph Ingenhoven is the special guest lecturer. At the McGraw-Hill Auditorium. Call 866-727-3820 or visit construction.com/event/innovation08/.

Transforming LACMA
Los Angeles
Ongoing
This installation is composed of the Renzo Piano Building Workshop drawings, studies, and models – all of which chronicle the development of a master plan and early building designs for the Los Angeles County Museum of Art (LACMA). At LACMA. Call 323/857-6000 or visit www.lacma.org.

Competitions

The Richard H. Driehaus Prize
Deadline: September 15, 2008
All interested parties – practicing architects, firms and their representatives (as well as industry leaders), architectural students, and classical enthusiasts – are encouraged to submit nominations for consideration for the 2009 laureate. The $200,000 Richard H. Driehaus Prize is awarded annually to an outstanding architect or firm whose work applies the principles of classicism, with respect to sustainability, and to the built and natural environment. Visit www.driehausprize.org.

Roanoke Urban Effect 2008 Design Competition
Registration deadline: September 30, 2008
This competition focuses on three specific areas of the city of Roanoke, Virginia, and challenges design professionals and students to create new environments that will transform the current urban landscape. Applicants will explore the city's potential by creating unique urban and architectural designs that enhance the best qualities of Roanoke and create positive impact on three specific areas of the city: the Roanoke City Market, The Crossing, and Reserve Avenue/Roanoke River. For more information, visit www.roanokeurbaneffect.org.

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Divorce Your Car
Thursday, December 4, 2008 • 6:30 – 8:00 pm

$12 Museum Members; $20 Non-Members; FREE for students with valid ID. Series price, $35 Members; $60 Non-Members. Register online at *www.nbm.org*.

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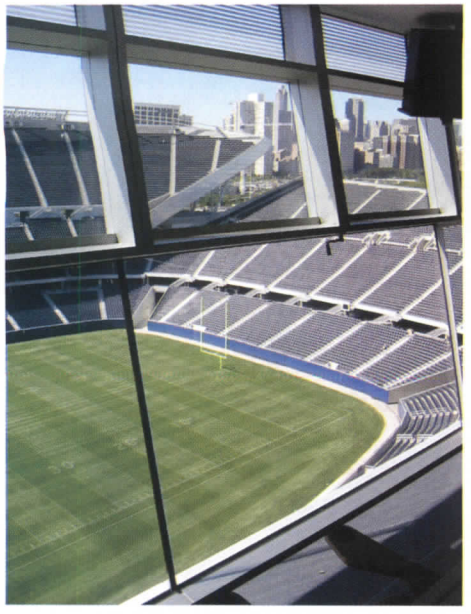

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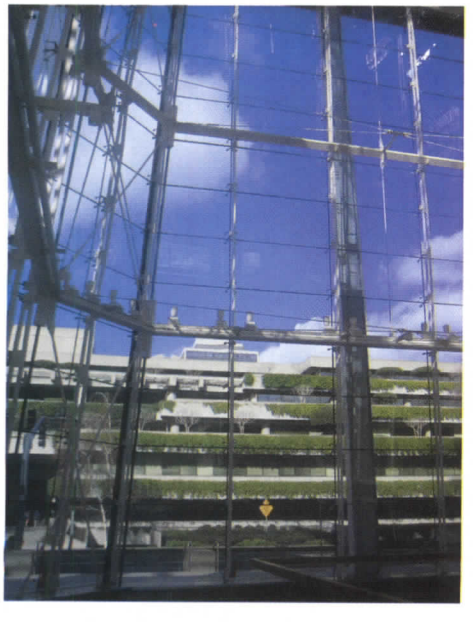


CIRCLE 89

Dates & Events

GSA Design Awards 2008

Deadline: October 15, 2008

The U.S. General Services Administration's 2008 Design Excellence and Construction Excellence Awards invites entries from individuals and firms that have worked on GSA-sponsored projects during the past five-and-a-half years. Awards will be presented in March 2009. Call 202/219-1086 or visit www.gsa.gov.

2008 National Student Design Competition

Deadline: November 3, 2008

The competition is open to all students of architecture and design in North America. Participants will be required to research, respond to, and highlight the unique aspects of designing a library for the 21st century that serves the selected site and community and is as energy efficient as possible, using the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) building standards. Visit www.aias.org or ww.kawneer.com.

2009 Palladio Awards

Deadline: November 14, 2008

The eighth annual competition recognizes outstanding work in traditional design for commercial, institutional, public, and residential projects. Visit www.palladioawards.com.

32nd Annual SOURCE Awards: National Lighting Design Competition

Deadline: January 1, 2009

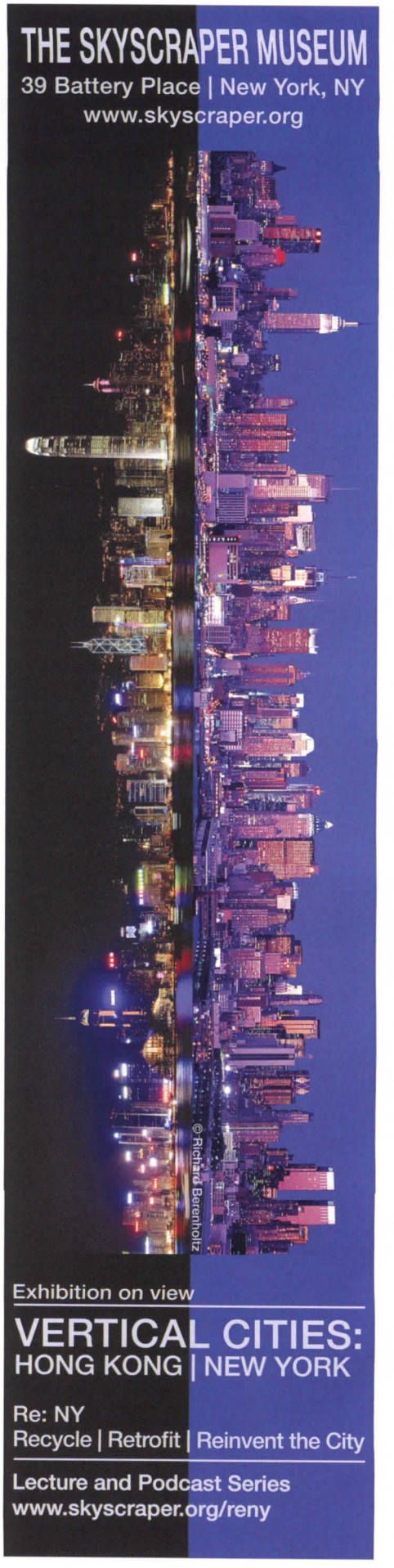
The competition is open to all lighting designers, architects, engineers, professional designers, and consultants who have used Cooper Lighting fixtures in a completed interior or exterior lighting design project. Call 630/513-8625 or visit www.cooperlighting.com.

Design for the Children Competition: Pediatric Health Clinic

Deadline: January 15, 2009

Open to students and professionals, this international design competition asks participants to explore the potential of future pediatric and prenatal clinics for East Africa. Entry is free, and our goal is to use the winning design as the base for a pediatric and prenatal health center in Rwanda. Visit www.designforthechildren.org.

E-mail information two months in advance to elisabeth_broome@mcgraw-hill.com.



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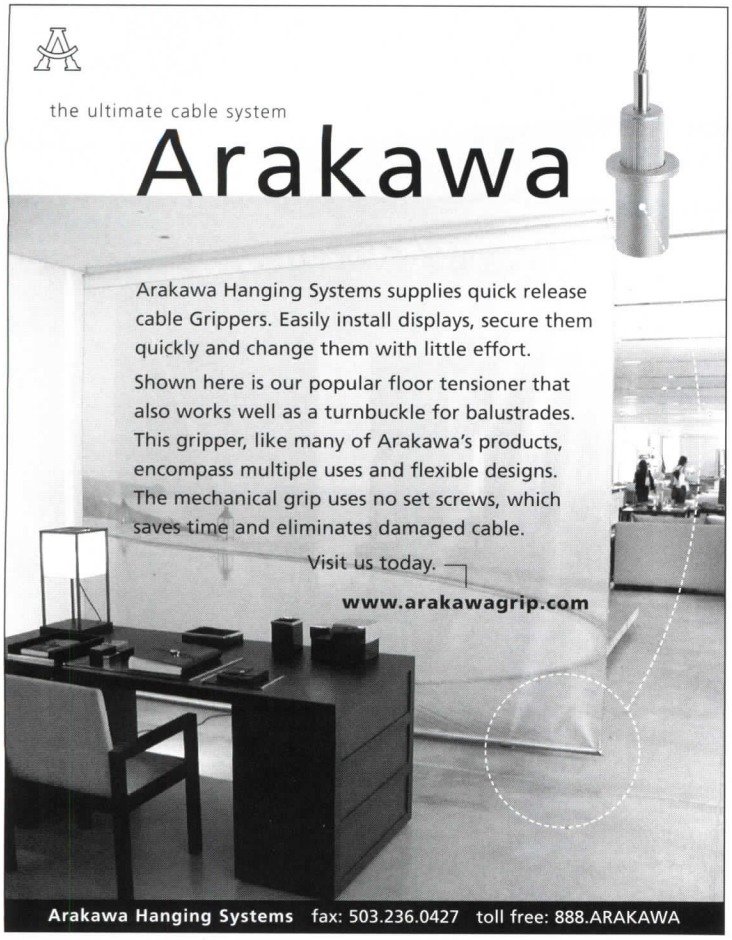

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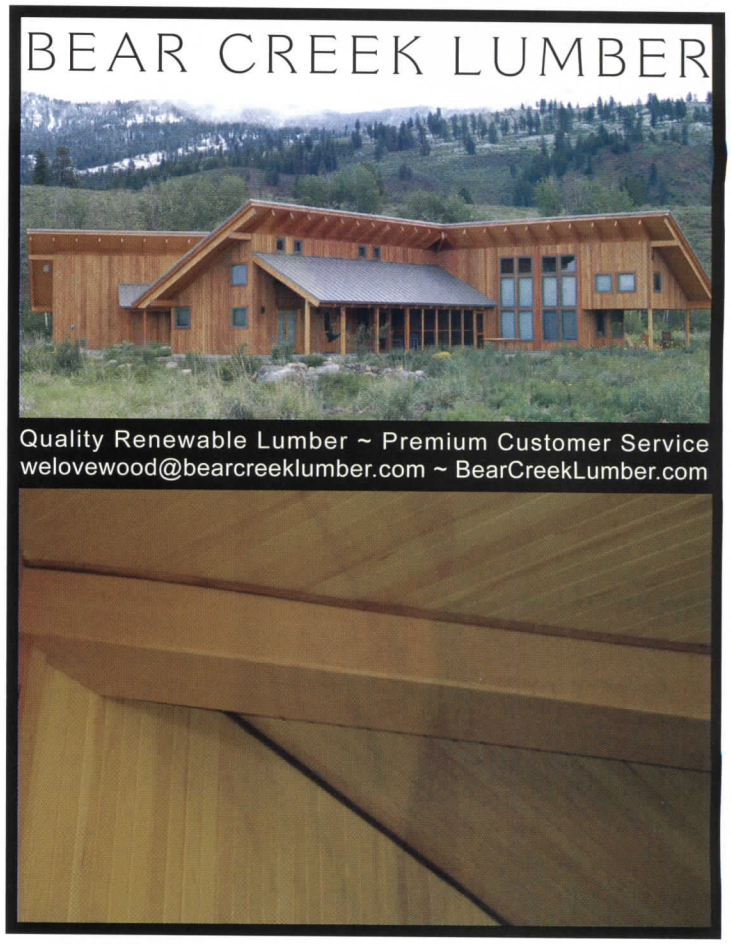

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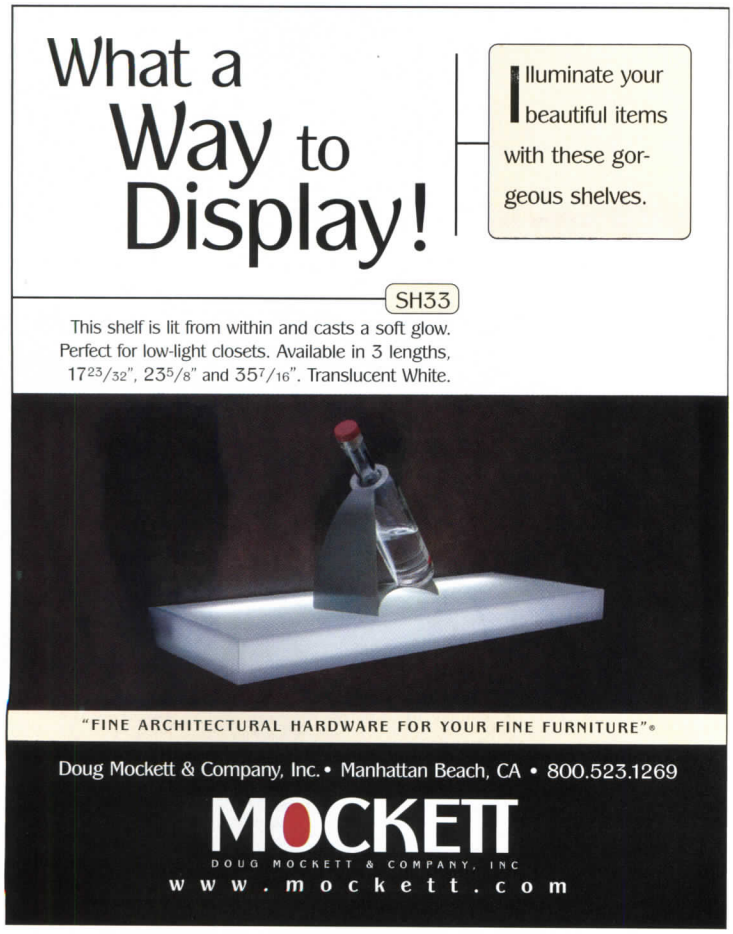

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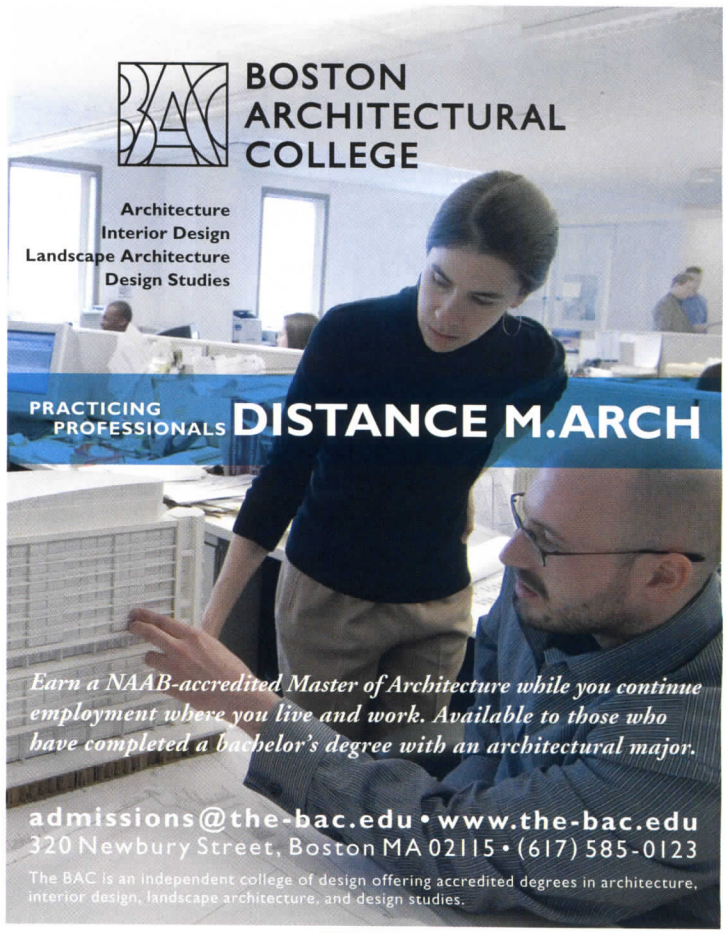

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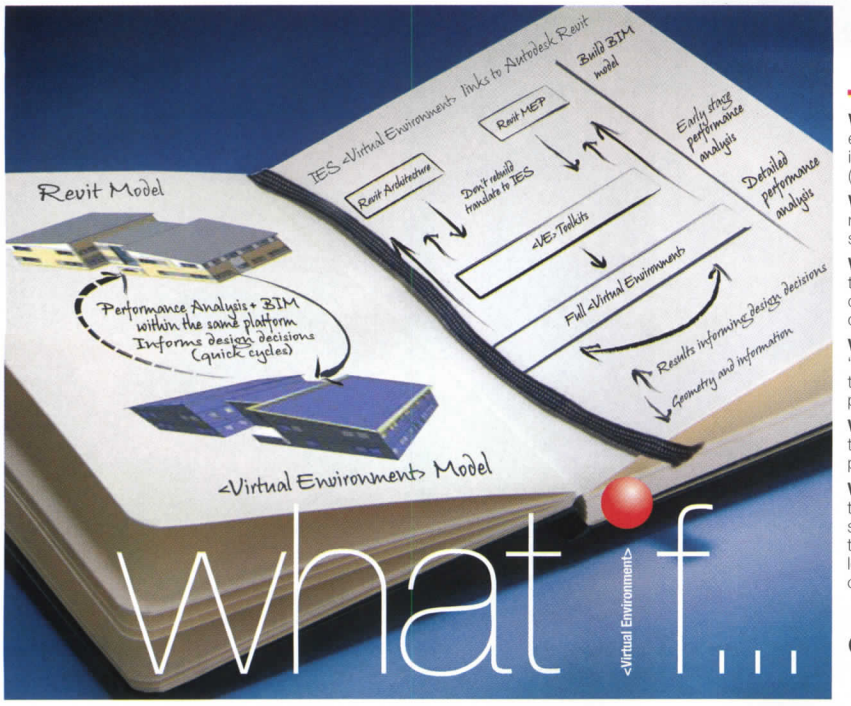

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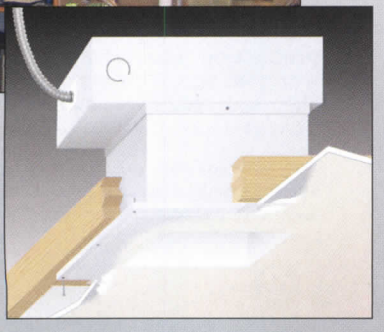

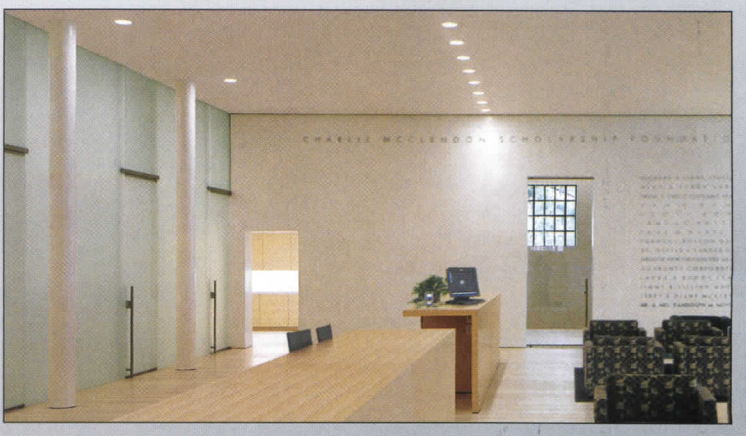

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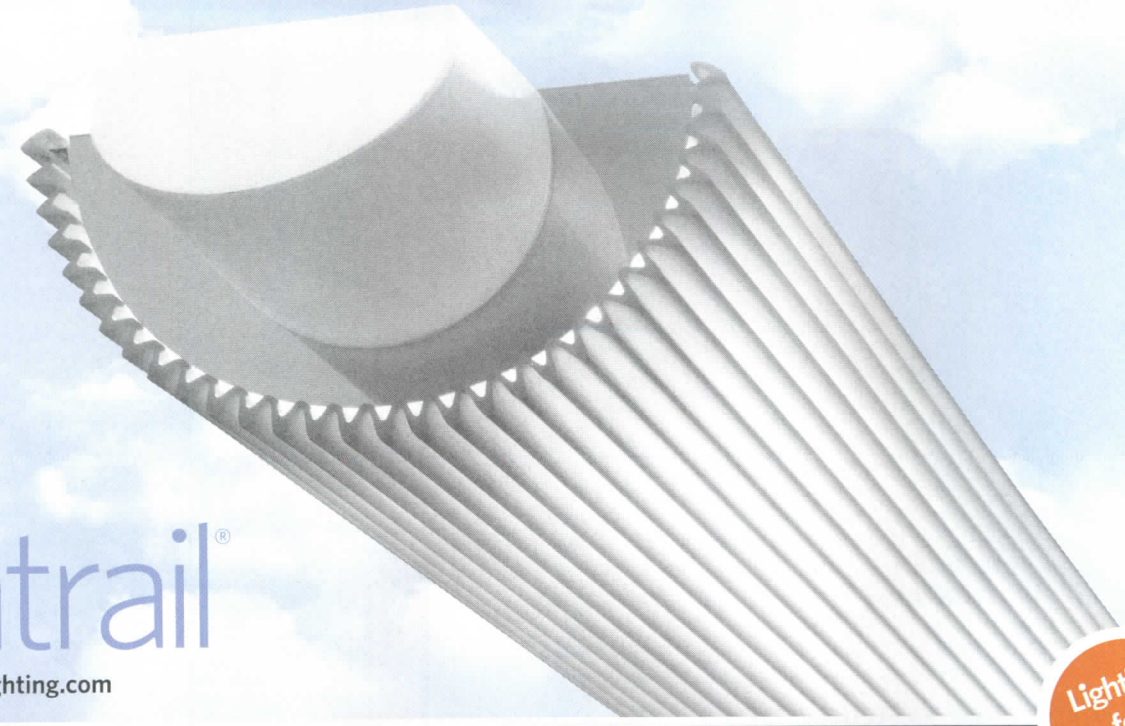

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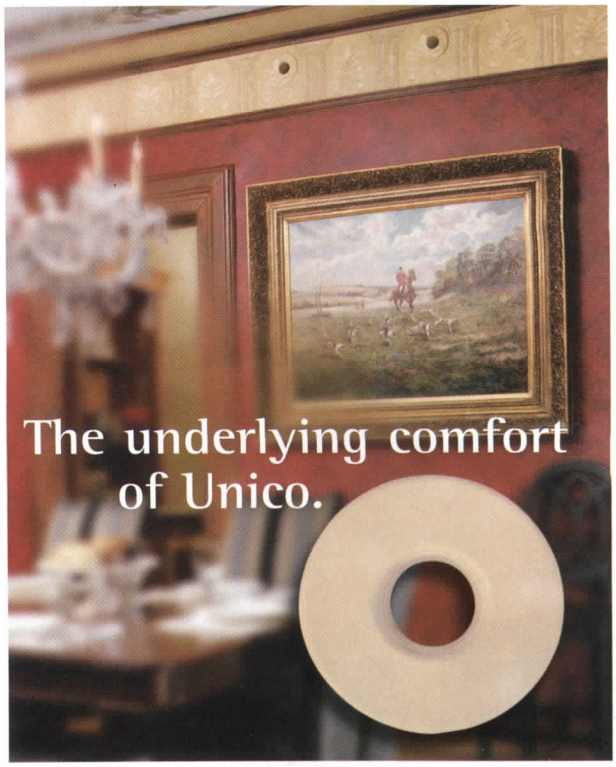

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Rakks wall-mounted shelving at Sweet & Associates Modern Furnishings, Cleveland, OH
Fixture Design: Christopher Hixson

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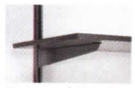
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A marriage of sharp angles and graceful arcs define this leg.

TL28VIVO

Cast in one piece of sturdy aluminum, perfect for fans of the modern, industrial look.
Size: 28 3/16" tall, glide adjusts 3/8".
Finishes: Matte Black, Metallic Silver, White, Charcoal Grey.

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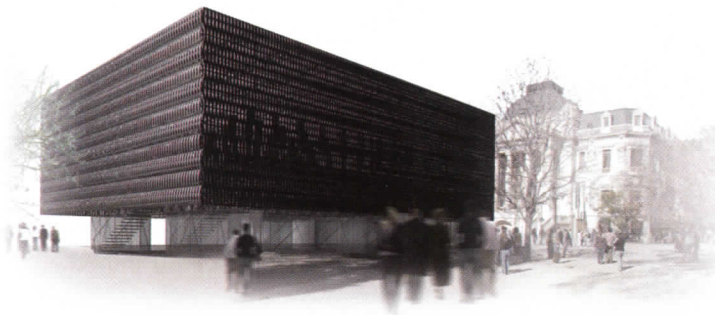
CIRCLE 103



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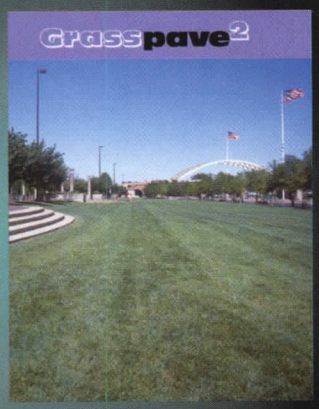
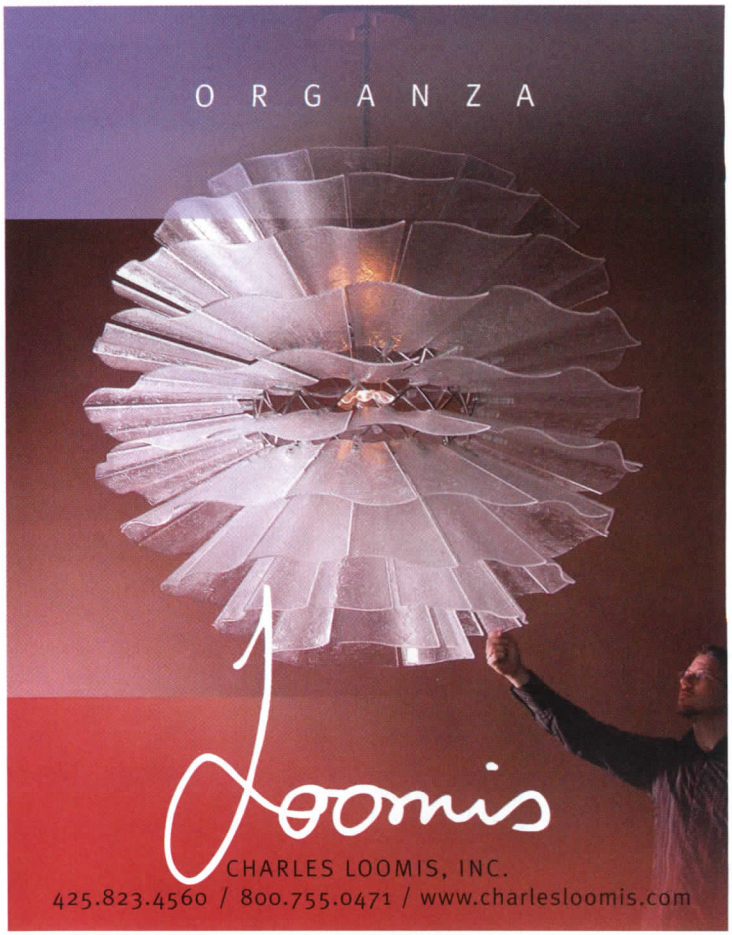


Grasspave2 (right) has 100% grass coverage, 5721 psi compressive strength, 92% void space for the healthiest root zone, and is made from 100% recycled plastic. Gravelpave2 (not shown) is beautiful too!

800-233-1510
invisiblestructures.com

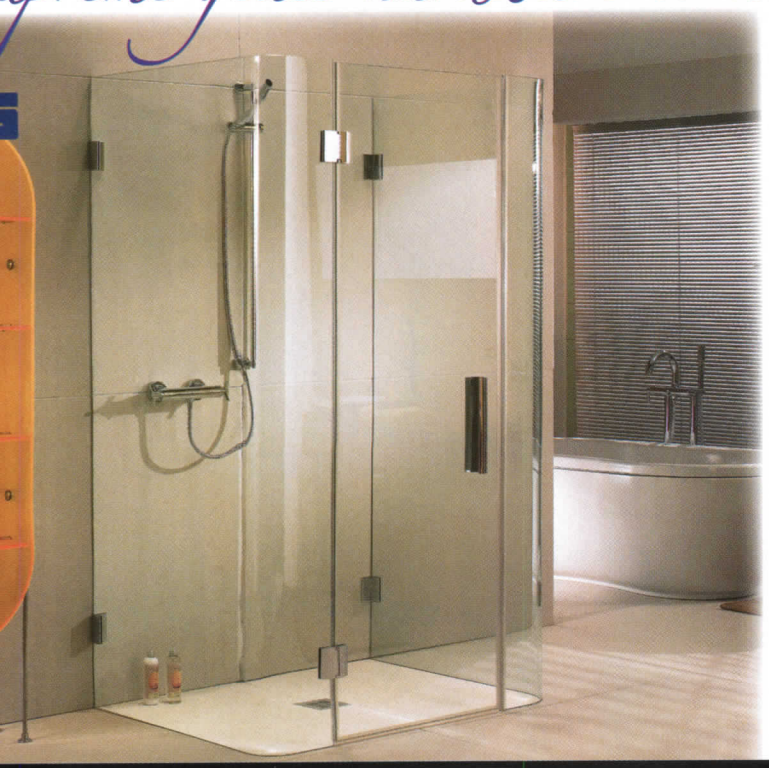
Invisible Structures, Inc.

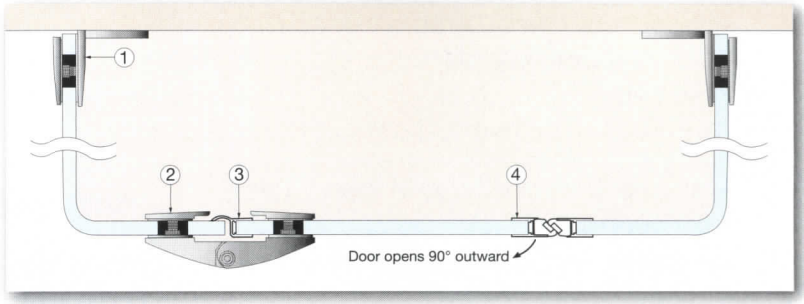
CIRCLE 104



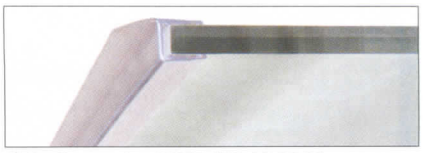
CIRCLE 105

Supreme glass hardware to add elegance on shower booth

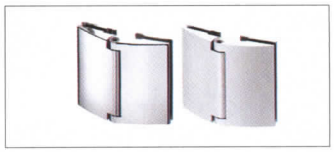




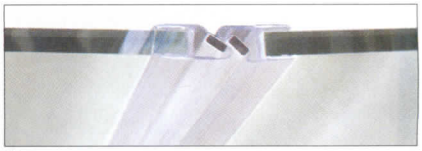
① Corner bracket (8106ZN)



③ Sealing gasket (8857KUO-10-2010)



② Magnetic self-close hinge (8102ZN)



④ Sealing gasket with magnet (8851KUO-10-2010)

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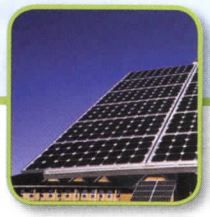
CIRCLE 106

NEW TWO-DAY PROGRAM

outlook 09 Executive Conference

Industry Forecast and Trends



Join McGraw-Hill Construction on October 22-23 in Washington D.C., for our annual premier event: The Outlook 2009 Executive Conference. The newly expanded, two-day program includes segments designed to provide critical information on areas of utmost importance to construction professionals. This year, join us at the Outlook 2009 Industry Forecast and Trends Executive Conference to secure the information you need to be successful in 2009 and beyond.

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2009 Construction Activity Outlook
Robert Murray,
Vice President, Economic Affairs, McGraw-Hill Construction

Trends in Home Building & Residential Construction
Kermit Baker, Ph.D., Hon. AIA,
Chief Economist, The American Institute of Architects

Player & Product Trends
Harvey Bernstein,
Vice President, Industry Analytics, Alliances & Strategic Initiatives, McGraw-Hill Construction

Luncheon Keynote Address
Tucker Carlson, *Senior Campaign Correspondent,* MSNBC

The Road Ahead: Green Building Trends and Market Growth
Rick Fedrizzi,
President, CEO and Founding Chairman, U.S. Green Building Council

The Economic & Political Outlook: Fasten Your Seatbelts
Michael Mandel,
Chief Economist, BusinessWeek

Building Materials Outlook
John Mothersole,
Principal, Industry Practices, Global Insight

Futurist Vision
Michael Rogers,
Futurist-in-Residence, The New York Times

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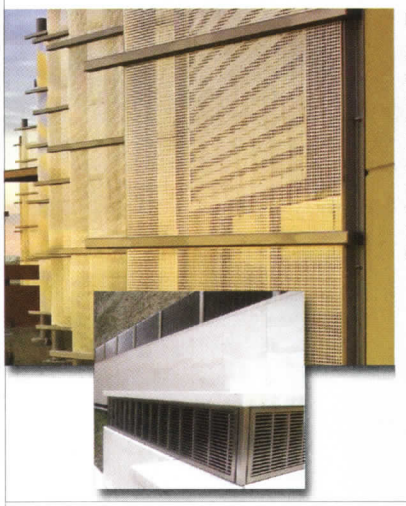
Circle **150**

Perforated Metal & Metal Grating



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Circle **153**

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Cifial USA

Exclusively engineered by renowned Portuguese designer Carlos Aguiar, the Techno M3 series combines flawless lines with a modern twist to create an unrivaled look to any home. With dimensions of 5-in. long by 9-in. high, the 3-Hole Widespread Faucet takes center stage in any bathroom. Cifial's M3 collection is available in a choice of four designer finishes including polished chrome, satin nickel, polished nickel and weathered. 800-528-4904 www.cifialusa.com

Circle **151**

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Accuride International Inc.

3832 Easy-Close slides bring drawers to a smooth, gentle close, ensuring safe and quiet operation. Designed for cabinetry and casework found in libraries, schoolrooms, laboratories, hospitals, and high-end retail. In residential applications, the quiet performance is valued throughout the home. Offers full extension and a 100-lb. load capacity. 888-459-8624 www.accuride.com

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Gage Corporation, Int.

The Gage Steel Floor System by Planium is a durable, high-tech flooring solution designed and manufactured in Italy for purity of form and ease of installation. The embossed stainless steel and black organic finishes have been designed to prevent traffic wear and are virtually indestructible. Contact the Gage factory for literature and sample requests. 866-855-4243 www.gagecorp.net

Circle **152**

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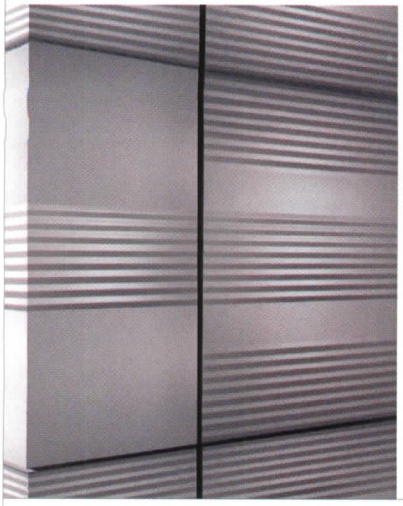
Architectural Columns & Balustrades by Melton Classics provides the design professional with the most comprehensive selection of quality architectural products including architectural columns, balustrades, mouldings, cornices, and a wide array of architectural elements. Architectural columns are available plain or fluted, load-bearing or column covers, round or square in fiberglass, fiberglass/marble composite, synthetic stone, cast stone, GFRC, and wood for paint or stain. Architectural Columns & Balustrades by Melton Classics offers several maintenance free balustrade products ideal for any application. 800-963-3060 www.meltonclassics.com

Circle **155**

Wall Panels

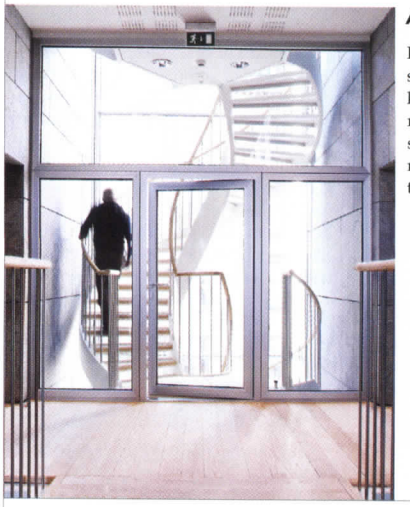


CENTRIA

CENTRIA is now offering a new design option of variable striations on its Formawall® Dimension Series® Panels. Up to four 6-in. wide striation bands are available with the new option. Additionally, striations can run out to both edges with striation placements in 1/4-in. increments with a minimum of 1-in. smooth band between striation bands. This new option of variable striations offers building teams virtually unlimited design possibilities while still providing extraordinary performance with CENTRIA Formawall Dimension Series. 800-759-7474 www.CENTRIA.com

Circle 156

Fire-Rated Aluminum Products



Aluflam North America

Imagine being able to specify a fire-rated system that looks so good you wouldn't know it's fire-rated. Imagine the clean, rich lines of clear glass. With ALUFLAM storefront and curtainwall systems, this is reality. Contact them for further information. 714-899-3990 www.aluflam-usa.com

Circle 159

Sheet Membranes

Use Guide	Crack Protection	Water Proofing	Joint Bridging	Sound Isolation	Exterior Decks
Chloralay®		X	X		X
NobleSeal® TS	X	X	X		
NobleSeal® CIS	X	X	X		
NobleSeal® SIS	X	X	X	X	
Noble Deck™	X	X	X		X

Noble Company

For over 40 years, Noble Company has pioneered the use of sheet membranes in the tile and stone industry. At the heart of all Noble systems is a core layer of Chlorinated Polyethylene (CPE), an inherently flexible elastomeric sheet that will not rot, crack or deteriorate due to microorganisms. Sheet membranes are available for crack isolation, waterproofing, joint bridging, and sound isolation. NobleSeal sheets save time and money. Noble membranes are easy to install and provide quality solutions to prevent costly failures. All of Noble's membranes are made in the U.S.A. 800-878-5788 www.noblecompany.com

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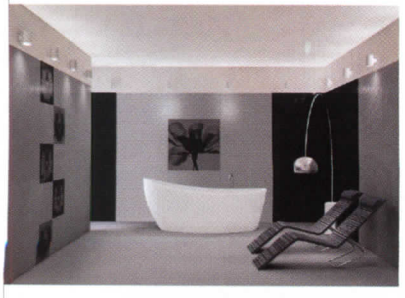
Extreme Fenestration Performance

AZON USA INC.

Conserving energy, while reducing greenhouse gases, is possible when manufacturers of fenestration products use the Azon thermal barrier method for aluminum windows and Warm-Light® warm-edge spacer for insulating glass. Modern daylighting systems produced with both Azon structural thermal barrier technologies will yield a fenestration system capable of upholding the highest efficiency and sustainability standards. Contact them to learn about the role of Azon thermal barriers in energy conservation. 800-788-5942 www.azonintl.com

Circle 160

Wall Tile Collection

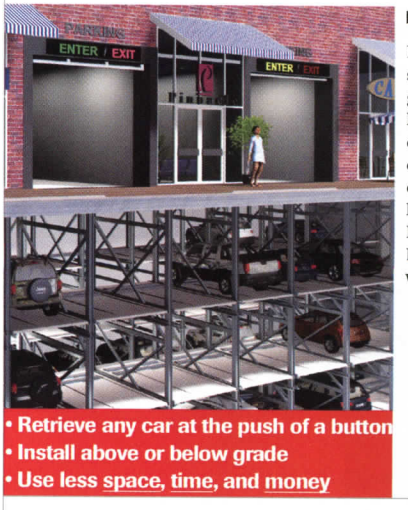


Viva Ceramica Slate

"It's the result of the collaboration with Patrizia Moroso, who knows what dreams are about and Massimo Gardone, the photographer with the magical eye who can make black explode into a thousand colours. Two people I really like to work with because they share my passion for the unexplored territory of new applications where a super thin, super light, 100x100 indestructible tile can become a bathroom, a building decoration or a work of art, depending on what the designers feel like. Thanks Patrizia, thanks Massimo for teaching all of us that we can see better with our eyes closed." - Fabrizio Zanfi www.cerviva.it

Circle 158

Automated Parking Garage



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Boomerang's reliable automated parking systems use 50% less space than ramp garages by storing cars 2 to 20 levels high on a small footprint. Systems can be wrapped in any façade and configured to fit almost any project. Best of all, the total cost per space is less than structured parking decks. Proudly made in the U.S.A. 888-606-9395 Email info@boomerangsystems.com www.boomerangsystems.com

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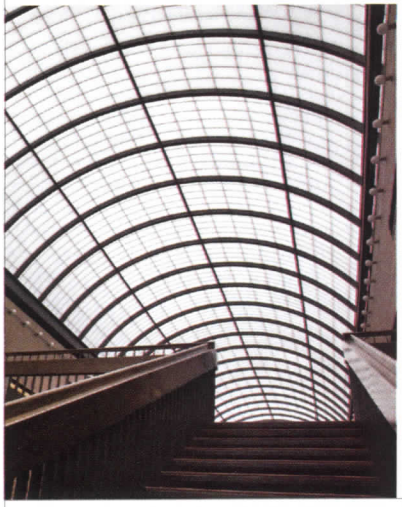
Advertisement

Versatile, Energy-Saving Daylighting

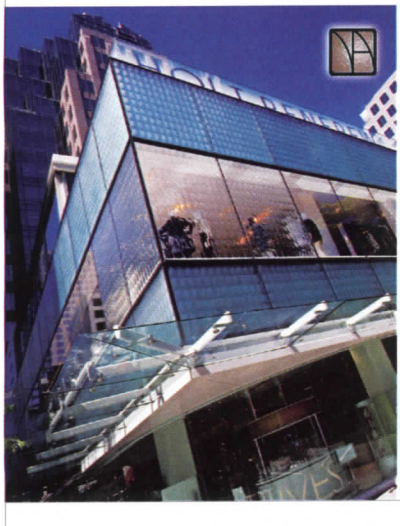


Major Industries, Inc.

Save on energy costs with cost-effective Guardian 275® Translucent Daylighting Panels. Guardian 275® skylight and curtainwall systems allow controlled natural light to illuminate interiors while eliminating unwanted glare and hot-spots. Guardian 275® systems also offer LEED® credit opportunities, integral water management systems and industry-leading warranties. 888-759-2678 www.majorskylights.com

Circle **162**

Convex Glass Pillows



Nathan Allan Glass Studios Inc.

Convex Glass was produced and developed with the renowned architectural firms of Janson/Goldstein and Front Inc, in NYC. Convex Glass is the first real 3D Glass produced in geometric type patterns. Both surfaces are shaped so that dimensional viewing can take place from either side of the glass. Convex Glass can be produced in 1/4-in., 3/8-in., 1/2-in., 5/8-in. and 3/4-in. single layered panels up to 8-ft. x 12-ft. 6-in., and can be safety tempered as well. Rectangular, square, and circle shapes can be produced. A unique method of casting allows panels to "fit like a glove", enabling successful resin laminating. 604-277-8533 ext. 225 www.nathanallan.com

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Specialty Doors

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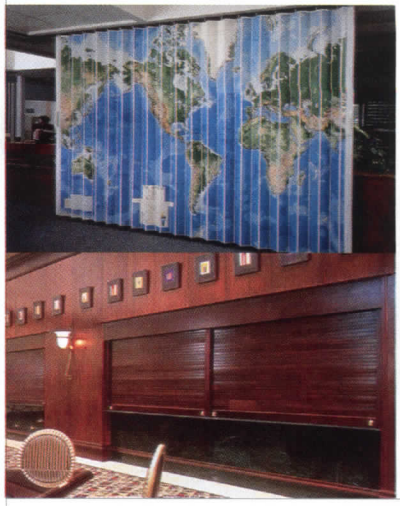
Circle **164**

Doors for Interior Architecture

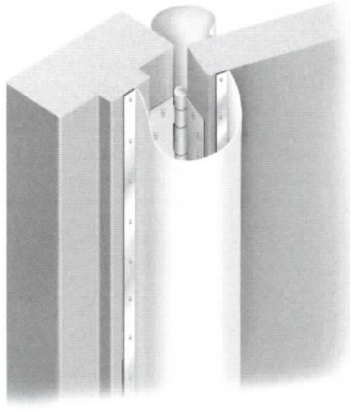


Woodfold Mfg., Inc.

Some will say that nothing is more beautiful than wood. Woodfold Mfg., Inc. would agree. Woodfold Mfg., Inc. custom made accordion and roll-up doors (available in hardwood and non-hardwood finishes as well) are both functional and beautiful. Woodfold Mfg., Inc. has models available for use as sight, security, and acoustic applications. Its solid hardwood roll-up doors coil conveniently overhead. And, to assure on time completion of your projects, Woodfold Mfg., Inc. has an excellent production cycle. 503-357-7181 Fax number 503-357-7185 www.woodfold.com/AR

Circle **165**

Child Finger Guard

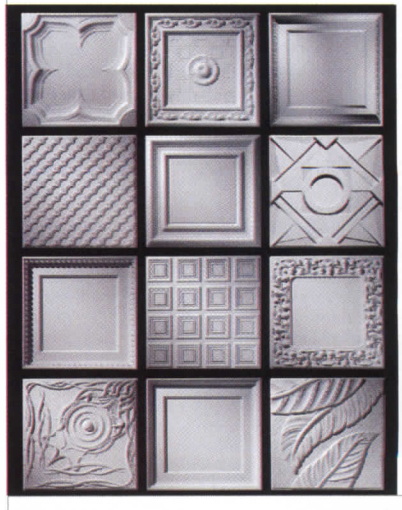


ZERO INTERNATIONAL

Hands and finger protection on doors, for child-care facilities, schools, hospitals, hotels and public places. A commercial-quality maintenance-free product of flexible, synthetic polyisoprene and aluminum in a natural gray color. Available in 6-in. and 8-in. widths for door openings up to 180 degrees, the ZERO guard also complies with child-care center design guide (PBS-P140). 718-585-3230 www.zerointernational.com

Circle **166**

Ornamental Plaster Ceiling Tiles



Above View Mfg., By Tiles, Inc.

Above View ornamental plaster ceiling tiles are fabricated from a non-toxic, non-combustible, proprietary composition. They drop into any standard 15/16-in. T-Bar grid system. There are more than 50 standard designs, custom design work, and 1,300 custom colors and faux finishes available upon request. 414-744-7118 www.aboveview.com

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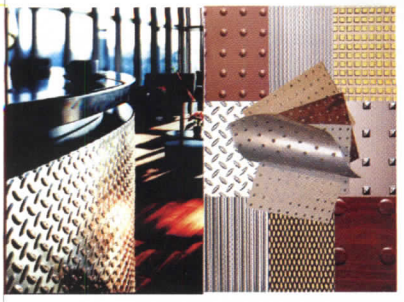
Thermoplastic & Real Metal Hybrid Laminates



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Jack Arnold — European Copper

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Circle **172**

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Circle **170**

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Unicel Architectural Corp.

Vision Control® insulated glass units with integral cord-free louvers are hermetically sealed and germ-free for superior indoor air quality and lower maintenance costs. Made of extruded aluminum, the louvers are sandwiched between glass panels, and are aligned for the utmost visual and acoustical privacy. In tests, Vision Control® exceeds the double glazing performance in warm and cold climates and surpasses triple glazing in reducing cooling power consumption. Vision Control® helps architectural projects qualify for LEED® credits. 800-668-1580 www.unicelarchitectural.com

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Circle 174

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Circle 177

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Circle 175

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Circle 176

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		AIACC California Practice Conference *aiacc.org*	209
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45		Architectural Woodwork Institute *awinet.org*	73
1	S	Armstrong *armstrong.com*	cov2-1
58		Artemide *artemide.us*	133
32		AS Hanging Systems *arts-supplies.net*	50
42		Avonite Surfaces *avonite.com*	68
64		B-K Lighting *bklighting.com*	147
92		Bear Creek Lumber *bearcreeklumber.com*	190
22		Bentley Systems Inc *bentley.com*	34
65, 66		Big Ass Fans® *bigassfans.com*	148-153
82	S	Bilco Company, The *bilco.com*	182
54	S	Bobrick *bobrick.com*	91
94		Boston Architectural College *the-bac.edu*	190
97		Cascade Coil Drapery *cascadecoil.com*	192
56	S	CertainTeed *certainteed.com*	93
38	S	CertainTeed Gypsum *certainteed.com*	60
105		Charles Loomis *charlesloomis.com*	195
57		CNA AEC Design Liability *planetriskmanagement.com*	94
6,25	S	Construction Specialties *c-sgroup.com/3000*	7, 41
71	S	CR Laurence Co Inc *crlaurence.com*	168
15	S	Delta *deltafaucet.com*	24
93,103		Doug Mockett & Company Inc *mockett.com*	190, 194
53	S	DuPont Corian *corian.com*	89
17	S	DuPont SentryGlas *sentryglas.com*	28-29
33	S	DuPont Tyvek *tyvek.com*	51
90	S	E Dillon & Company *edillon.com*	189
8		EIMA Association *eima.com*	10-11
4	S	Electrolux *electroluxusa.com*	5
70		elliptipar *elliptipar.com*	167
96	S	Engineered Lighting Products *elplighting.com*	191
144		Eventscape *eventscape.net*	170
111		ExpesiteLite *expesite.com*	185
		Expo Cihac *expocihac.com.mx*	192
44	S	FLEXCO *flexcofloors.com*	72
61		Formglas *formglas.com*	136
68	S	GE Appliances	161-165
5,75,89		Glas Trosch AG *luxar.ch*	6,176 188
107		Glass Association of North America *glasswebsite.com*	cov3
40	S	Guardian SunGuard *sunguardglass.com*	64
84		Hanover Architectural Products *hanoverpavers.com*	183
67		Hanson Roof Tile	155-159
63		HanStone Fine Quartz Surfaces *hanwhasurfaces.com*	141
3		HDI Railing Systems *hdirailings.com*	4
98		Headwaters Resources *flyash.com*	192
60	S	High Concrete Structures Inc *highconcrete.com*	135
95		IES *iesve.com*	191
104	S	Invisible Structures Inc *invisiblestructures.com*	195
78		Italian Trade Commission *marblefromitaly.com*	179
12	S	JELD-WEN Windows & Doors *jeld-wen.com*	19
77		Joel Berman Glass Studios Ltd *jbermanglass.com*	178
20		Julius Blum & Co Inc *juliusblum.com*	32
35	S	Kawneer Company Inc *kawneer.com*	55
31	S	KI *ki.com*	49
48	S	KONE *kone.com*	78
108		Lutron *lutron.com*	cov4
51	S	MAPEI *mapei.us*	82
7		Marvin Windows & Doors *marvin.com*	8-9
		McGraw-Hill Construction *construction.com*	196, 210 205-207
80	S	McNichols Co *mcnichols.com*	181
30	S	MechoShade Systems Inc *mechoshade.com*	48
86		modularArts *modararts.com*	184
21	S	Nana Wall Systems Inc *nanawall.com*	33
		National Building Museum *nbm.org*	186
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149	S	National Terrazzo & Mosaic Assn *ntma.com*	80A-D
39	S	Natural Stone Council *genuinestone.org*	63
81		NATUREMAKER *naturemaker.com/ar*	181
79		NJ SmartStart Buildings *njsmartstartbuildings.com*	180
14	S	Nuconsteel	22-23
2	S	Oldcastle Glass® *oldcastleglass.com*	2-3
37		Oldcastle Glass /Skywall® *oldcastleglass.com*	59
99	S	Peerless Lighting *peerless-lighting.com*	193
34,55	S	Pilkington *pilkington.com*	52,92
9	S	PPG *ppgideascapes.com*	12-13
102	S	Rakks *rakks.com*	194
101		Rejuvenation Inc *rejuvenation.com*	194
76		Rocky Mountain Hardware *rockymountainhardware.com*	177
41		Rulon Company *rulonco.com*	67
110		SAFTI/O'Keeffes Inc *safti.com*	145
43		SageGlass *sage-ec.com*	71
87	S	Sargent *studiocollection.com*	186
47	S	Schott Corporation *us.schott.com*	77
83	S	Seal Master Corporation *sealmaster.com*	182
11	S	Sherwin-Williams *sherwin-williams.com*	17
28,29		Simpson Strong-Tie Company Inc *simpsonstrongwall.com*	46, 47
		Skyscraper Museum, The *skyscraper.org*	188
26	S	Sloan Valve Company *sloanvalve.com*	43
49	S	Smoke Guard *smokeguard.com*	80
106		Sugatsune America Inc *sugatsune.com*	195
85		Sun Valley Bronze *svbronze.com*	184
27		The Travelers Companies Inc *stpaultravlers.com*	45
72	S	Tile of Spain *spaintiles.info*	169
74		Timely *timelyframes/ar.com*	174
46		TOTO *totousa.com*	74
69		Trespa *trespanorthamerica.com*	166
10		Trex *trex.com*	14
52	S	Umicore *vmzinc-us.com*	83
100		Unico System, The *unicosystem.com*	193
36		Viking Range Corporation *vikingrange.com*	56
59	S	Vista Window Film *vista-films.com*	134
73	S	W&W Glass Systems Inc *wwglass.com*	173
109		Walker Zanger *walkerzanger.com*	143
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18, 19	S	Western Red Cedar Lumber Association *realcedar.org*	30, 31
		XVI Architecture Biennale 2008 *bienaldearquitectura.cl*	194
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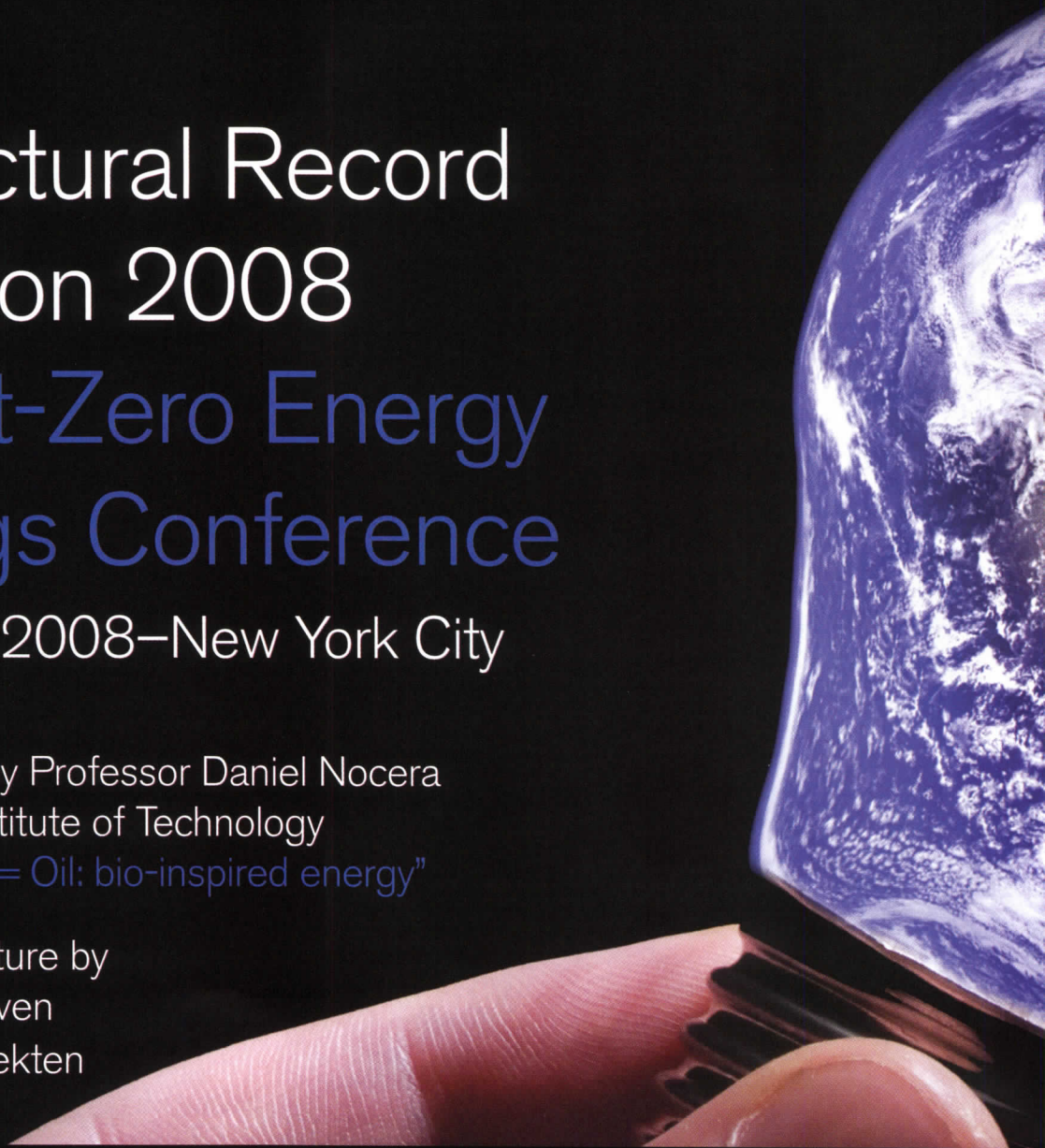

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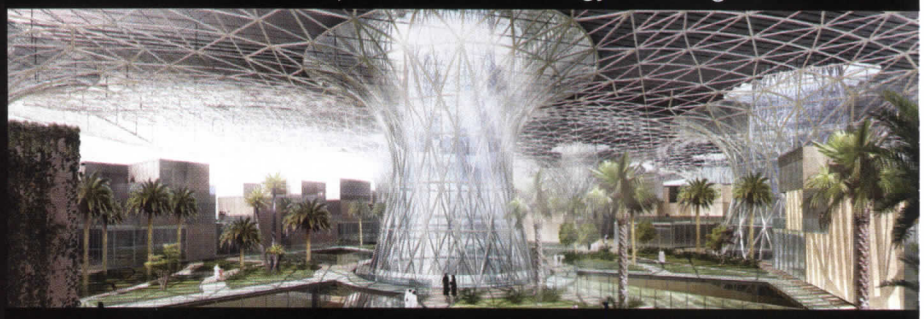

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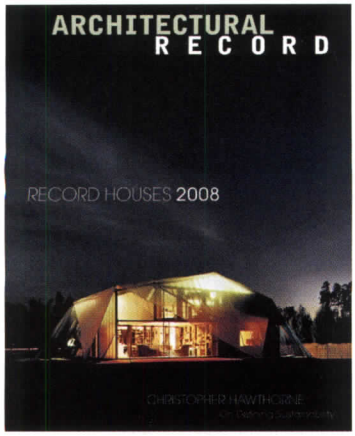

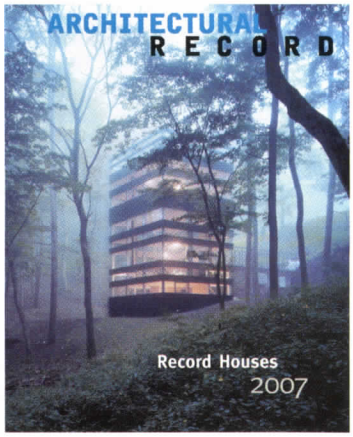

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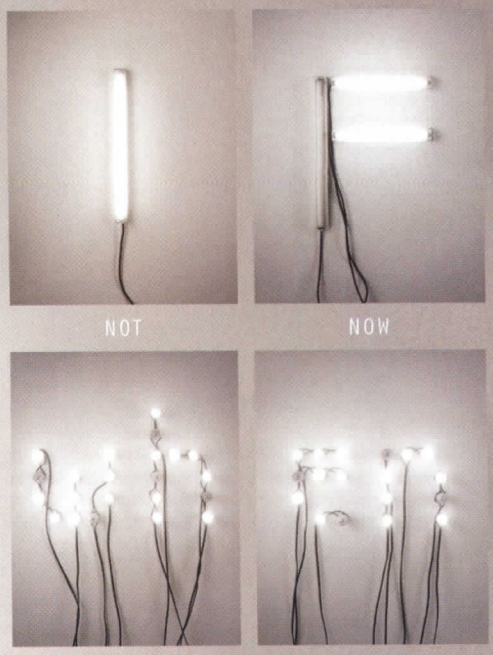

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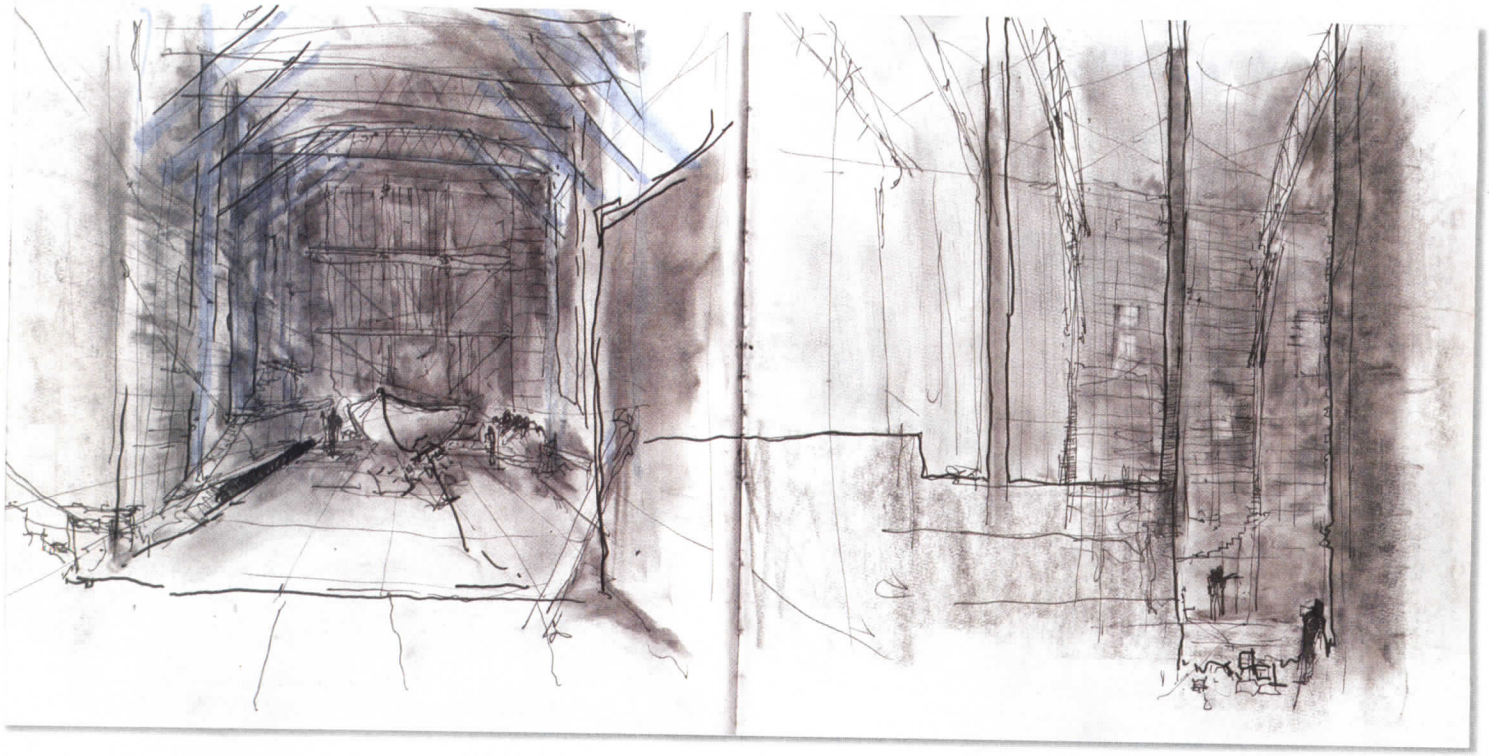


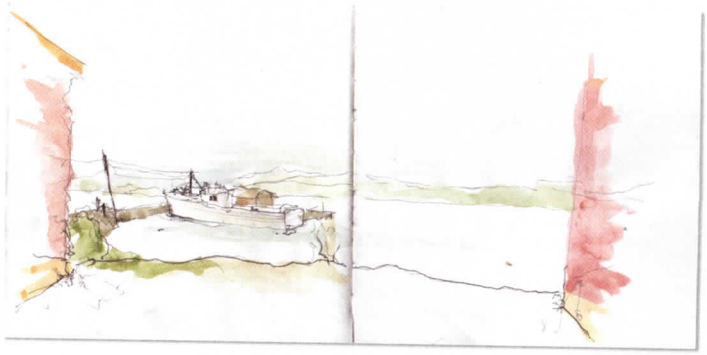
***Snyder's Shipyard, Dayspring, Nova Scotia, Canada*, pen and charcoal, 8 by 16 inches, 2008.**

Drawing in the formative years

Elizabeth Zevallos

A twenty-three-year-old Canadian graduate student, Kristofer Kelly may not be a licensed architect yet, but even old-timers in the field turn their heads when he sits down to draw. Kelly, now entering his third year in the Master of Architecture program at Calgary University's Faculty of Environmental Design, reveals a profound understanding of the craft while capturing the celerity of a new generation, where the "fast and messy" process triumphs over all. The immediacy and directness of a quick sketch allows Kelly to express the true feeling of a space, something he deems important for a future in urban design. "If I can't get it onto paper in time, then the image is either not powerful enough or I'm just not fast enough," he explains.

While conveying this sense of transient energy, the charcoal-and-pen drawing *Snyder's Shipyard* addresses manifold aspects of the huge century-old boathouse that sits wearily on the LaHave River in Dayspring, Nova Scotia. For Kelly, who draws to understand what he sees, the boathouse is a "complex of layers: the people who have worked in the space, the weather that's beaten down on it, and the design as it shifted through history. When you draw it, you think of such beautiful moments that you would have otherwise missed." The drawings were made during a student excursion while Kelly was enrolled in GHOST, a design-build summer research lab organized by MacKay-Lyons Sweetapple Architects of Halifax, Nova Scotia. Kelly, who often had to wield a hammer instead of a pen, describes the workshop as one of the most formative experiences of his life. *Fishing Boat on LaHave River* was started just minutes before the GHOST van was about to drive away. Emerging from the gloomy, cathedral-like boathouse into the vast, open seascape was an experience that Kelly refused to let pass.



***Fishing Boat on LaHave River, Dayspring, Nova Scotia, Canada*, pen and watercolor, 8 x 16 inches, 2008.**

"I need to draw when the ideas are fluid and changing. I start drafting with the computer once I must set boundaries for myself, and then jump back and forth as much as possible." Kelly appreciates an education that stresses the traditional freedom and space to draw while still working in the digital context of 2008. No matter what part of the process, Kelly claims, "There's always room to use your hand, and it does wonders for me." ■

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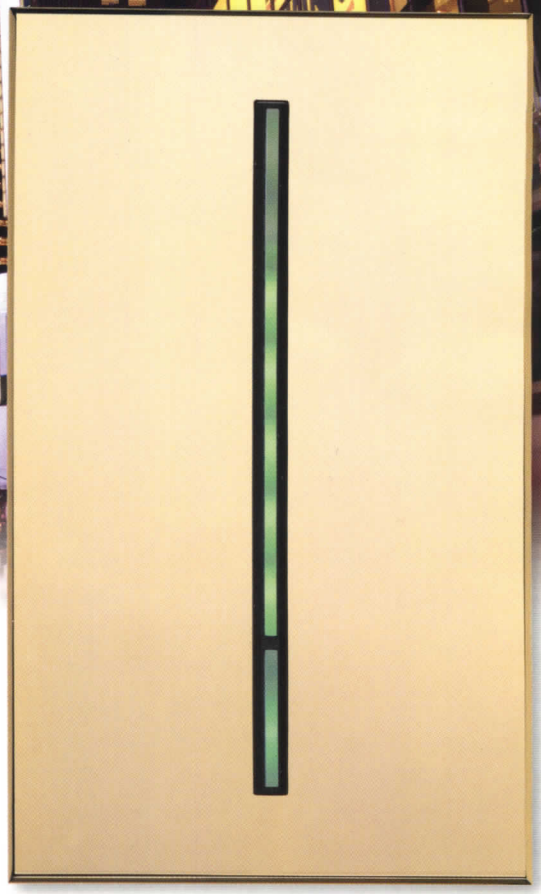

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